L3 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1969:511149 CAPLUS
DOCUMENT NUMBER: 71:111149
TITLE: Effects of anticoagulants on experimental carcinogenesis
AUTHOR(S): Marcuccio, Luigi; Restuccia, Paolo; Grimaldi, T.
CORPORATE SOURCE: Univ. Bari, Bari, Italy
SOURCE: Atti e Relazioni - Accademia Pugliese delle Scienze, Parte 2: Classe di Scienze Fisiche, Mediche e Naturali (1967), 25(Pt. 2), 327-35
CODEN: APFNAZ; ISSN: 0365-5458
DOCUMENT TYPE: Journal
LANGUAGE: Italian
AB In rats inoculated i.p. with reticulosarcoma IRE (ascitic form) i.p. injections of 50 or 80 units of heparin or of 7 or 15 mg. laminarin, resp., prolonged neither the latency period of the neoplasia nor the survival time of the animals.

L4 ANSWER 9 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:773732 CAPLUS
DOCUMENT NUMBER: 132:288446
TITLE: Activation of murine peritoneal macrophages by laminarin
AUTHOR(S): Xue, Jingbo; Liu, Xiying; Zhang, Hongfen
CORPORATE SOURCE: Medical College, Qingdao University, Tsingtao, 266021, Peop. Rep. China
SOURCE: Zhongguo Haiyang Yaowu (1999), 18(3), 23-25
CODEN: ZHYAE8; ISSN: 1002-3461
PUBLISHER: Shandongsheng Haiyang Yaowu Kexue Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB Activation of murine peritoneal macrophages by laminarin was studied in G57BL/6 mice. Peritoneal macrophages could be markedly activated by i.p. injection of laminarin (40 mg/kg) for cytolysis. Laminarin activated peritoneal macrophages secretion of TNF in vitro in the presence of LPS (10 ng/mL).

L4 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:423114 CAPLUS
DOCUMENT NUMBER: 125:131856
TITLE: Inhibition of angiogenesis and murine **tumor** growth by **laminarin** sulfate
AUTHOR(S): Hoffman, R.; Paper, D. H.; Donaldson, J.; Vogl, H.
CORPORATE SOURCE: Clinical Oncology and Radiotherapeutics Unit, MRC Centre, Cambridge, CB2 2QH, UK
SOURCE: British Journal of Cancer (1996), 73(10), 1183-1186
CODEN: BJCAAI; ISSN: 0007-0920
PUBLISHER: Stockton
DOCUMENT TYPE: Journal
LANGUAGE: English
AB LAM S5 is a polysulfated derivative of the glucan **laminarin** that inhibits basic fibroblast growth factor (bFGF) binding and the bFGF-stimulated proliferation of fetal bovine heart endothelial (FBHE) cells. This report demonstrates that LAM S5 has anti-angiogenic activity, as shown by inhibition of tubule formation by endothelial cells cultured on Matrigel and inhibition of vascularization of the chick chorioallantoic membrane. In addition, LAM S5 caused a **tumor** growth delay of the murine RIF-1 **tumor** of 2.6 days.

L4 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:441776 CAPLUS
DOCUMENT NUMBER: 65:41776
ORIGINAL REFERENCE NO.: 65:7840d-f
TITLE: Comparative study of the biological action of polysaccharides glucan and laminarin
AUTHOR(S): Fomina, I. P.; Navashin, S. M.; Preobrazhenskaya, M. E.; Rozenfel'd, E. L.
CORPORATE SOURCE: Res. Inst. Antibiots., Moscow
SOURCE: Byulleten Eksperimental'noi Biologii i Meditsiny (1966), 61(5), 79-83
CODEN: BEBMAE; ISSN: 0365-9615
DOCUMENT TYPE: Journal
LANGUAGE: Russian

AB Albino mice were used for comparing biol. activity of glucan and **laminarin**. In the 1st series of expts., the animals were injected with glucan or **laminarin** in doses of 5-30 mg./kg., and then subjected to the action of following microorganisms: [Salmonella typhosa [Bacillus] dysenteriae sonne [Shigella sonne], Escherichia coli, Proteus mirabilis, Pseudomonas aeruginosa, Staph[ylococcus] aureus, S. albus, and D[iplococcus] pneumoniae. Glucan and **laminarin** produced nearly identical preventive effects in exptl. staphylococcic sepsis: the survival of treated animals was 76-83%, whereas the death rate of controls was 90%. In sepsis induced by gram-neg. microorganisms, glucan showed a favorable influence, while **laminarin** proved ineffective. In the 2nd exptl. series, an antitumor effect of both polysaccharides was observed. Glucan, 20 mg./kg. produced a pronounced antitumor effect against Ehrlich **tumor** and sarcoma 180, inhibiting their growth by 53-60%. No inhibitory activity of **laminarin** was found under analogous conditions. Since both polysaccharides were of the same mol. structure, it is suggested that different biol. activities was due to their size and configuration. This explanation is supported by a reduction in glucan biol. activity after splitting off some of its glucose residues.

L1 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1663260	A1	20060607	EP 2004-787076	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:157159 CAPLUS
DOCUMENT NUMBER: 132:344175
TITLE: Quantitative high-performance liquid chromatographic determination of acrolein in plasma after derivatization with Luminarin 3
AUTHOR(S): Paci, A.; Rieutord, A.; Guillaume, D.; Traore, F.; Ropenga, J.; Husson, H.-P.; Brion, F.
CORPORATE SOURCE: Service de Pharmacie-Toxico-Pharmacologie, Hopital Robert Debre, Paris, 75019, Fr.
SOURCE: Journal of Chromatography, B: Biomedical Sciences and Applications (2000), 739(2), 239-246
CODEN: JCBBEP; ISSN: 0378-4347
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A rapid, sensitive and specific high-performance liquid chromatog. method for the quantification of acrolein (1), one of the toxic metabolites of oxazaphosphorine alkylating agents (cyclophosphamide and ifosfamide) was developed. Condensation of acrolein with Luminarin 3 afforded a fluorescent derivative that could be specifically detected and quantified. Chromatog. conditions involved a C18 RP column Uptisphere and a gradient elution system to optimize resolution and time anal. The method showed high sensitivity with a limit of detection of 100 p mol/mL and a limit of quantification of 300 p mol/mL. This technique is particularly suitable for pharmacokinetic studies on plasma of oxazaphosphorine-receiving

patients.
REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L3 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1969:511149 CAPLUS
DOCUMENT NUMBER: 71:111149
TITLE: Effects of anticoagulants on experimental carcinogenesis
AUTHOR(S): Marcuccio, Luigi; Restuccia, Paolo; Grimaldi, T.
CORPORATE SOURCE: Univ. Bari, Bari, Italy
SOURCE: Atti e Relazioni - Accademia Pugliese delle Scienze, Parte 2: Classe di Scienze Fisiche, Mediche e Naturali (1967), 25(Pt. 2), 327-35
CODEN: APFNAZ; ISSN: 0365-5458
DOCUMENT TYPE: Journal
LANGUAGE: Italian
AB In rats inoculated i.p. with reticulosarcoma IRE (ascitic form) i.p. injections of 50 or 80 units of heparin or of 7 or 15 mg. laminarin, resp., prolonged neither the latency period of the neoplasia nor the survival time of the animals.

L3 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:394530 CAPLUS
DOCUMENT NUMBER: 142:423818
TITLE: Therapeutical combination against cancer comprising a monoclonal antibody with a glucan
INVENTOR(S): Yvin, Jean-Claude; Panak, Edouard; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 6 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005095250	A1	20050505	US 2003-698034	20031030
WO 2005049044	A1	20050602	WO 2004-EP13119	20041029

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-698034 A 20031030

AB The present invention relates to compns. and methods for treating humans and warm-blood animals suffering from **cancer**. More particularly, a therapeutical treatment in which a monoclonal antibody is administered with either β-(1,3)-glucan like **laminarin** or an oligo-β-(1,3)-glucan and a pharmaceutically acceptable carrier, to patients suffering from **cancer** are described. Female nude mice were implanted s.c. with human breast carcinoma cell line. Mice were injected i.p. with combination of Phycarine 500 mg/kg, once a day for 5 days and Herceptin 0.5 mg/kg, twice a week during 3 wk. The combined administration of Phycarine and Herceptin allowed a limitation in the increase of the tumor weight which was far higher than the mean value obtained when administering Herceptin or Phycarine alone; said activity on the tumor weight being even equivalent to the one obtained when administering a conventional dosage of taxol.

L3 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,

CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

EP 1663260 A1 20060607 EP 2004-787076 20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L3 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:308355 CAPLUS
DOCUMENT NUMBER: 140:297492
TITLE: Cancer therapy using β-glucan and monoclonal antibodies
INVENTOR(S): Ross, Gordon D.
PATENT ASSIGNEE(S): University of Louisville Research Foundation, Inc., USA
SOURCE: PCT Int. Appl., 92 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004030613	A2	20040415	WO 2003-US27975	20030904
WO 2004030613	A3	20050113		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2496508	AA	20040415	CA 2003-2496508	20030904
AU 2003295326	A1	20040423	AU 2003-295326	20030904
EP 1539194	A2	20050615	EP 2003-786508	20030904

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

CN 1694715	A	20051109	CN 2003-824893	20030904
US 2006009419	A1	20060112	US 2005-526185	20050803

PRIORITY APPLN. INFO.: US 2002-408126P P 20020904
WO 2003-US27975 W 20030904

AB The invention provides methods for using neutral soluble glucan and monoclonal antibodies for antitumor therapy. Neutral soluble β (1,3; 1,6) glucan enhances the tumoricidal activity of the innate immune system by binding to the C3 complement protein receptor CR3. The glucan does not stimulate the induction of inflammatory cytokines. Also described are methods of using whole glucan particles as an immunomodulator by inducing a shift from a Th2 response to the Th1 response, leading to an enhanced

antitumor cytotoxic T-cell response.

L3 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:434382 CAPLUS
DOCUMENT NUMBER: 139:12302
TITLE: Laminaria polysaccharides for therapeutical treatments
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Laboratoires Goeemar S.A., Fr.
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003045414	A2	20030605	WO 2002-EP13512	20021129
WO 2003045414	A3	20031016		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003119780	A1	20030626	US 2001-999202	20011130
US 6660722	B2	20031209		
CA 2468314	AA	20030605	CA 2002-2468314	20021129
AU 2002352187	A1	20030610	AU 2002-352187	20021129
EP 1448215	A2	20040825	EP 2002-787872	20021129
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1596118	A	20050316	CN 2002-823654	20021129
JP 2005510543	T2	20050421	JP 2003-546915	20021129

PRIORITY APPLN. INFO.: US 2001-999202 A 20011130
WO 2002-EP13512 W 20021129

AB A therapeutical method comprises administration to a patient of an effective amount of especially soluble **laminarin** for the treatment of tumors and more generally of **cancers** of the group comprising breast **cancer**, lung **cancer**, esophagus **cancer**, stomach **cancer**, intestine and colon **cancers**, and for the treatment of viral, bacterial and fungal diseases as well as diseases related to immunostimulant deficiencies of human beings and warm-blood animals.

L3 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1969:511149 CAPLUS
DOCUMENT NUMBER: 71:111149
TITLE: Effects of anticoagulants on experimental carcinogenesis
AUTHOR(S): Marcuccio, Luigi; Restuccia, Paolo; Grimaldi, T.
CORPORATE SOURCE: Univ. Bari, Bari, Italy
SOURCE: Atti e Relazioni - Accademia Pugliese delle Scienze, Parte 2: Classe di Scienze Fisiche, Mediche e Naturali (1967), 25(Pt. 2), 327-35
CODEN: APFNAZ; ISSN: 0365-5458
DOCUMENT TYPE: Journal
LANGUAGE: Italian
AB In rats inoculated i.p. with reticulosarcoma IRE (ascitic form) i.p. injections of 50 or 80 units of heparin or of 7 or 15 mg. laminarin,

resp., prolonged neither the latency period of the neoplasia nor the survival time of the animals.

L4 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:423114 CAPLUS
DOCUMENT NUMBER: 125:131856
TITLE: Inhibition of angiogenesis and murine **tumor** growth by **laminarin** sulfate
AUTHOR(S): Hoffman, R.; Paper, D. H.; Donaldson, J.; Vogl, H.
CORPORATE SOURCE: Clinical Oncology and Radiotherapeutics Unit, MRC Centre, Cambridge, CB2 2QH, UK
SOURCE: British Journal of Cancer (1996), 73(10), 1183-1186
CODEN: BJCAAI; ISSN: 0007-0920
PUBLISHER: Stockton
DOCUMENT TYPE: Journal
LANGUAGE: English
AB LAM S5 is a polysulfated derivative of the glucan **laminarin** that inhibits basic fibroblast growth factor (bFGF) binding and the bFGF-stimulated proliferation of fetal bovine heart endothelial (FBHE) cells. This report demonstrates that LAM S5 has anti-angiogenic activity, as shown by inhibition of tubule formation by endothelial cells cultured on Matrigel and inhibition of vascularization of the chick chorioallantoic membrane. In addition, LAM S5 caused a **tumor** growth delay of the murine RIF-1 **tumor** of 2.6 days.

L4 ANSWER 9 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:773732 CAPLUS
DOCUMENT NUMBER: 132:288446
TITLE: Activation of murine peritoneal macrophages by laminarin
AUTHOR(S): Xue, Jingbo; Liu, Xiying; Zhang, Hongfen
CORPORATE SOURCE: Medical College, Qingdao University, Tsingtao, 266021, Peop. Rep. China
SOURCE: Zhongguo Haiyang Yaowu (1999), 18(3), 23-25
CODEN: ZHYAE8; ISSN: 1002-3461
PUBLISHER: Shandongsheng Haiyang Yaowu Kexue Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB Activation of murine peritoneal macrophages by laminarin was studied in G57BL/6 mice. Peritoneal macrophages could be markedly activated by i.p. injection of laminarin (40 mg/kg) for cytolysis. Laminarin activated peritoneal macrophages secretion of TNF in vitro in the presence of LPS (10 ng/mL).

L4 ANSWER 10 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:703656 CAPLUS
DOCUMENT NUMBER: 132:160920
TITLE: Inhibition of heparanase activity and **tumor** metastasis by **laminarin** sulfate and synthetic phosphorothioate oligodeoxynucleotides
AUTHOR(S): Miao, Hua-Quan; Elkin, Michael; Aingorn, Elena; Ishai-Michaeli, Rivka; Stein, Cy A.; Vlodavsky, Israel
CORPORATE SOURCE: Department of Oncology, Hadassah University Hospital, Jerusalem, Israel
SOURCE: International Journal of Cancer (1999), 83(3), 424-431
CODEN: IJCNAW; ISSN: 0020-7136
PUBLISHER: Wiley-Liss, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparanase activity correlates with the metastatic potential of **tumor** cells. Moreover, the anti-metastatic effect of non-anti-coagulant species of heparin and certain sulfated polysaccharides was attributed to their heparanase-inhibiting activity. The authors investigated the effect of a chemical sulfated polysaccharide (**laminarin**) consisting primarily of beta-1,3 glucan (sodium **laminarin**) (LS) and of synthetic phosphorothioate oligodeoxynucleotides, primarily phosphorothioate homopolymer of cytidine (SdC28), on heparanase activity and **tumor** metastasis. Investigation of the ability of **tumor** cells to degrade heparan sulfate in intact extracellular matrix revealed that heparanase activity expressed by B16-BL6 mouse melanoma cells and 13762 MAT rat mammary adenocarcinoma cells was effectively inhibited by LS (50% inhibition at 0.2-1 μg/mL) but there was no inhibition by sodium **laminarin** up to a concentration of 50 μg/mL. Complete inhibition of the melanoma heparanase was obtained in the presence of 0.1 μM SdC28. A single i.p. injection of **laminarin** sulfate, but not of sodium **laminarin**, before i.v. inoculation of the melanoma or breast-carcinoma cells inhibited the extent of lung colonization by the **tumor** cells by 80 to 90%. Similar inhibition was exerted by 0.1 μM SdC28. At the effective concns., both compds. had a small effect on proliferation of the **tumor** cells and on growth of the primary **tumors** in vivo. These results further emphasize the involvement of heparanase in **tumor** metastasis and the potential clin. application of diverse heparanase-inhibiting mols. such as sulfated polysaccharides and synthetic polyanionic mols.
REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 11 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1999:682656 CAPLUS
DOCUMENT NUMBER: 132:260258
TITLE: Production of enzymolyzed kelp drink and its resistance action to tumor
AUTHOR(S): Xu, Zhongping; Zhang, Huakun; Song, Jianqiu; Zhang, Yinghui; Xu, Yutai; Wang, Hairen
CORPORATE SOURCE: School of Life Sciences, Shandong University, Jinan, 250100, Peop. Rep. China
SOURCE: Shipin Kexue (Beijing) (1999), 20(9), 51-53
CODEN: SPKHD5; ISSN: 1002-6630
PUBLISHER: Zhongguo Shipin Zazhishe
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB The method for production of enzymolyzed kelp drink and its resistance action to **tumor** were studied. The water extract from enzymolyzed kelp was diluted and made into four kinds of drinks, designated as A, B, C, and D, which contained 0.8, 0.4, 0.2, and 0.1 mg/mL **laminarin**, resp. The drinks were administered to mice intragastrically. By drinks B and C, phagocytosis was activated in mice P ϕ s were activated significantly and the peroxidase activity of the P ϕ s was stimulated. The S-180 transplanted **tumor** was also significantly inhibited by drinks B and C (44.1% and 37.7%, $p < 0.05$).

L4 ANSWER 12 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:423114 CAPLUS
DOCUMENT NUMBER: 125:131856
TITLE: Inhibition of angiogenesis and murine **tumor** growth by **laminarin** sulfate
AUTHOR(S): Hoffman, R.; Paper, D. H.; Donaldson, J.; Vogl, H.
CORPORATE SOURCE: Clinical Oncology and Radiotherapeutics Unit, MRC Centre, Cambridge, CB2 2QH, UK
SOURCE: British Journal of Cancer (1996), 73(10), 1183-1186
CODEN: BJCAAI; ISSN: 0007-0920
PUBLISHER: Stockton
DOCUMENT TYPE: Journal
LANGUAGE: English
AB LAM S5 is a polysulfated derivative of the glucan **laminarin** that inhibits basic fibroblast growth factor (bFGF) binding and the bFGF-stimulated proliferation of fetal bovine heart endothelial (FBHE) cells. This report demonstrates that LAM S5 has anti-angiogenic activity, as shown by inhibition of tubule formation by endothelial cells cultured on Matrigel and inhibition of vascularization of the chick chorioallantoic membrane. In addition, LAM S5 caused a **tumor** growth delay of the murine RIF-1 **tumor** of 2.6 days.

L4 ANSWER 13 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:995021 CAPLUS
DOCUMENT NUMBER: 124:37695
TITLE: Pharmaceutical compositions containing laminarin sulfate
INVENTOR(S): Vlodavsky, Israel; Miao, Hua-Quan
PATENT ASSIGNEE(S): Hadasit Medical Research Services and Development Co., Ltd., Israel; Whalley, Kevin
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9524907	A2	19950921	WO 1995-GB515	19950310

WO 9524907 A3 19951109
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TT, UA
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG
AU 9518567 A1 19951003 AU 1995-18567 19950310
PRIORITY APPLN. INFO.: IL 1994-108951 A 19940313
WO 1995-GB515 W 19950310

AB A pharmaceutical composition containing sodium **laminarin** sulfate for mimicking heparin activity and for therapeutic use instead of heparin, in preventing restenosis by the inhibition of vascular smooth muscle cell proliferation; in accelerating wound healing by activating the release of active growth factors stored in the extra-cellular matrix; and for inhibiting **tumor** cell metastasis by inhibition of heparanase activity.

L4 ANSWER 14 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:954435 CAPLUS
DOCUMENT NUMBER: 123:337150
TITLE: Structure-activity relationship of (1→3)-β-D-glucans in the induction of cytokine production from macrophages, in vitro
AUTHOR(S): Okazaki, Mitsuhiro; Adachi, Yoshiyuki; Ohno, Naohito; Yadomae, Toshiro
CORPORATE SOURCE: Sch. of Pharmacy, Tokyo Univ. of Pharmacy and Life Science, Tokyo, 192-03, Japan
SOURCE: Biological & Pharmaceutical Bulletin (1995), 18(10), 1320-7
CODEN: BPBLEO; ISSN: 0918-6158
PUBLISHER: Pharmaceutical Society of Japan
DOCUMENT TYPE: Journal
LANGUAGE: English

AB In a previous study, the authors reported that one of the gel-forming (1→3)-β-D-glucans, grifolan (from Grifola frondosa, GRN), stimulated cytokine production from macrophages in vitro. However, several other gel-forming (1→3)-β-D-glucans, such as sonifilan (SPG) and SSG, did not induce cytokine production from macrophages. The ultrastructure of gel-forming (1→3)-β-D-glucans, especially the triple- and single-helix, does not affect the cytokine-inducing activity. The action on **tumor** necrosis factor α (TNFα) release was correlated with the mol. weight of GRN, since the highest mol. weight fraction of GRN, Mr ≥ 450,000, exhibited the strongest activity. Although, native SSG (Mr ≥ 2,000,000) did not induce cytokine production, chemical modification involving debranching of the side chain glucosyl residues of SSG resulted in TNFα inducing activity. These results suggest that the branching ratio and mol. weight of (1→3)-β-D-glucans are important factors for the production of cytokines from macrophages. GRN-inducible TNFα release was reduced by co-culturing with SPG, SSG, or the soluble β-glucan, **laminarin** (LAM). Pretreatment alone with SPG or LAM was not sufficient for significant inhibition of GRN-inducible TNFα release. TNFα production induced with 50 μg/mL of zymosan (ZyM) was also reduced by addition of SPG, but TNFα production, stimulated with a higher concentration (100 μg/mL) of ZyM or with lipopolysaccharide (LPS), was not reduced significantly. The inhibitory effect of LAM on the uptake of GRN by RAW264.7 cells was not completely correlated with TNFα release. These results suggest that macrophages may incorporate β-glucans through certain (1→3)-β-D-glucan-specific mechanisms and/or other endocytosis pathways, and that the β-glucan-specific route is partially associated with cytokine production In conclusion, TNFα release by macrophages is induced only by β-glucans with high mol. wts. and

lower branching ratios, and the mechanism for the recognition of β-glucans is multiple and assumed to be divided into several parts involving various cellular functions.

L4 ANSWER 15 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1967:462921 CAPLUS
DOCUMENT NUMBER: 67:62921
TITLE: Influence of procoagulants and anticoagulants on experimental carcinogenesis
AUTHOR(S): Solarino, Giuseppe
CORPORATE SOURCE: Univ. Bari, Bari, Italy
SOURCE: Uzbekskii Biologicheskii Zhurnal (1958-199?) (1967), 53(2), 103-9
CODEN: UZBZAZ; ISSN: 0042-1685
DOCUMENT TYPE: Journal
LANGUAGE: Italian
AB ε-Aminocaproic acid, trasylol, and thromboplastin shortened the latent period of some exptl. **tumors** and the survival time of the rats. The anticoagulant **laminarin**, exerted no statistically significant effect on the onset and growth of 3,4-benzpyrene sarcomas but exerted an accelerating effect on the onset and growth of transplantable rat **tumor**, IRE reticulosarcoma, whether solid or ascitic. 17 references.

L4 ANSWER 16 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:441776 CAPLUS
DOCUMENT NUMBER: 65:41776
ORIGINAL REFERENCE NO.: 65:7840d-f
TITLE: Comparative study of the biological action of polysaccharides glucan and laminarin
AUTHOR(S): Fomina, I. P.; Navashin, S. M.; Preobrazhenskaya, M. E.; Rozenfel'd, E. L.
CORPORATE SOURCE: Res. Inst. Antibiots., Moscow
SOURCE: Byulleten Eksperimental'noi Biologii i Meditsiny (1966), 61(5), 79-83
CODEN: BEBMAE; ISSN: 0365-9615
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Albino mice were used for comparing biol. activity of glucan and **laminarin**. In the 1st series of expts., the animals were injected with glucan or **laminarin** in doses of 5-30 mg./kg., and then subjected to the action of following microorganisms: [Salmonella typhosa [Bacillus] dysenteriae sonne [Shigella sonne], Escherichia coli, Proteus mirabilis, Pseudomonas aeruginosa, Staph[ylococcus] aureus, S. albus, and D[iplococcus] pneumoniae. Glucan and **laminarin** produced nearly identical preventive effects in exptl. staphylococcic sepsis: the survival of treated animals was 76-83%, whereas the death rate of controls was 90%. In sepsis induced by gram-neg. microorganisms, glucan showed a favorable influence, while **laminarin** proved ineffective. In the 2nd exptl. series, an antitumor effect of both polysaccharides was observed. Glucan, 20 mg./kg. produced a pronounced antitumor effect against Ehrlich **tumor** and sarcoma 180, inhibiting their growth by 53-60%. No inhibitory activity of **laminarin** was found under analogous conditions. Since both polysaccharides were of the same mol. structure, it is suggested that different biol. activities was due to their size and configuration. This explanation is supported by a reduction in glucan biol. activity after splitting off some of its glucose residues.

L4 ANSWER 17 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1963:444312 CAPLUS
DOCUMENT NUMBER: 59:44312
ORIGINAL REFERENCE NO.: 59:8030h
TITLE: Effects of sulfated degraded **laminarin** on experimental **tumor** growth

AUTHOR(S): Jolles, B.; Remington, Mary; Andrews, P. S.
CORPORATE SOURCE: Gen. Hosp., Northampton, UK
SOURCE: British Journal of Cancer (1963), 17, 109-15
CODEN: BJCAAI; ISSN: 0007-0920
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB The compound, a polysaccharide derivative, inhibited the growth of sarcoma 180 when injected at the site of the transplant or into growing tumors.

L4 ANSWER 18 OF 19 MEDLINE on STN
ACCESSION NUMBER: 1999426885 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10495437
TITLE: Inhibition of heparanase activity and **tumor** metastasis by **laminarin** sulfate and synthetic phosphorothioate oligodeoxynucleotides.
AUTHOR: Miao H Q; Elkin M; Aingorn E; Ishai-Michaeli R; Stein C A; Vlodavsky I
CORPORATE SOURCE: Department of Oncology, Hadassah University Hospital, Jerusalem, Israel.
SOURCE: International journal of cancer. Journal international du cancer, (1999 Oct 29) Vol. 83, No. 3, pp. 424-31.
Journal code: 0042124. ISSN: 0020-7136.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199910
ENTRY DATE: Entered STN: 1 Nov 1999
Last Updated on STN: 1 Nov 1999
Entered Medline: 21 Oct 1999
AB Heparanase activity correlates with the metastatic potential of **tumor** cells. Moreover, the anti-metastatic effect of non-anti-coagulant species of heparin and certain sulfated polysaccharides was attributed to their heparanase-inhibiting activity. We investigated the effect of a chemically sulfated polysaccharide (**laminarin**), consisting primarily of beta-1,3 glucan (sodium **laminarin**), and of synthetic phosphorothioate oligodeoxynucleotides, primarily phosphorothioate homopolymer of cytidine (SdC28), on heparanase activity and **tumor** metastasis. Investigation of the ability of **tumor** cells to degrade heparan sulfate in intact extracellular matrix revealed that heparanase activity expressed by B16-BL6 mouse melanoma cells and 13762 MAT rat mammary adenocarcinoma cells was effectively inhibited by LS (50% inhibition at 0.2-1 microgram/ml), but there was no inhibition by sodium **laminarin** up to a concentration of 50 microgram/ml. Complete inhibition of the melanoma heparanase was obtained in the presence of 0.1 microM SdC28. A single i.p. injection of **laminarin** sulfate, but not of sodium **laminarin**, before i.v. inoculation of the melanoma or breast-carcinoma cells inhibited the extent of lung colonization by the **tumor** cells by 80 to 90%. Similar inhibition was exerted by 0.1 microM SdC28. At the effective concentrations, both compounds had a small effect on proliferation of the **tumor** cells and on growth of the primary **tumors** in vivo. These results further emphasize the involvement of heparanase in **tumor** metastasis and the potential clinical application of diverse heparanase-inhibiting molecules such as sulfated polysaccharides and synthetic polyanionic molecules.

L4 ANSWER 19 OF 19 MEDLINE on STN
ACCESSION NUMBER: 96154438 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8593430
TITLE: Structure-activity relationship of (1-->3)-beta-D-glucans in the induction of cytokine production from macrophages, in vitro.

AUTHOR: Okazaki M; Adachi Y; Ohno N; Yadomae T
CORPORATE SOURCE: Laboratory of Immunopharmacology of Microbial Products School of Pharmacy, Tokyo University of Pharmacy and Life Science, Japan.
SOURCE: Biological & pharmaceutical bulletin, (1995 Oct) Vol. 18, No. 10, pp. 1320-7.
Journal code: 9311984. ISSN: 0918-6158.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199604
ENTRY DATE: Entered STN: 22 Apr 1996
Last Updated on STN: 22 Apr 1996
Entered Medline: 8 Apr 1996
AB In a previous study, we reported that one of the gel-forming (1-->3)-beta-D-glucans, grifolan (from Grifola frondosa, GRN), stimulated cytokine production from macrophages in vitro. However, several other gel-forming (1-->3)-beta-D-glucans, such as sonifilan (SPG) and SSG, did not induce cytokine production from macrophages. The ultrastructure of gel-forming (1-->3)-beta-D-glucans, especially the triple- and single-helix, does not affect the cytokine-inducing activity. The action on **tumor** necrosis factor alpha (TNF alpha) release was correlated with the molecular weight of GRN, since the highest molecular weight fraction of GRN, Mr > or = 45000, exhibited the strongest activity. Although, native SSG (Mr > or = 2000000) did not induce cytokine production, chemical modification involving debranching of the side chain glucosyl residues of SSG resulted in TNF alpha inducing activity. These results suggest that the branching ratio and molecular weight of (1-->3)-beta-D-glucans are important factors for the production of cytokines from macrophages. GRN-inducible TNF alpha release was reduced by co-culturing with SPG, SSG, or the soluble beta-glucan, **laminarin** (LAM). Pretreatment alone with SPG or LAM was not sufficient for significant inhibition of GRN-inducible TNF alpha release. TNF alpha production induced with 50 micrograms/ml of zymosan (ZyM) was also reduced by addition of SPG, but TNF alpha production, stimulated with a higher concentration (100 micrograms/ml) of ZyM or with lipopolysaccharide (LPS), was not reduced significantly. The inhibitory effect of LAM on the uptake of GRN by RAW264.7 cells was not completely correlated with TNF alpha release. These results suggest that macrophages may incorporate beta-glucans through certain (1-->3)-beta-D-glucan-specific mechanisms and/or other endocytosis pathways, and that the beta-glucan-specific route is partially associated with cytokine production. In conclusion, TNF alpha release by macrophages is induced only by beta-glucans with high molecular weights and lower branching ratios, and the mechanism for the recognition of beta-glucans is multiple and assumed to be divided into several parts involving various cellular functions.

L4 ANSWER 1 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:475282 CAPLUS
TITLE: Effect of heparanase inhibitor laminarin sulfate on the expression of uPA, VEGF in the esophageal carcinoma carried by nude mice
AUTHOR(S): Chen, Kuisheng; Zhang, Qiuhong; Zhang, Lan; Gao, Dongling; Zheng, Xiangyu; Zhang, Yunhan
CORPORATE SOURCE: The First Affiliated Hospital, Zhengzhou University, Zhengzhou, 450052, Peop. Rep. China
SOURCE: Zhongguo Zhongliu Linchuang (2005), 32(14), 830-833
CODEN: ZZLIEP; ISSN: 1000-8179
PUBLISHER: Zhongguo Zhongliu Linchang Bianji Weiyuanhui
DOCUMENT TYPE: Journal
LANGUAGE: Chinese
AB After EC9706 cells were disposed by four concns. **laminarin** sulfate (0.2μg/mL, 0.4μg/mL, 0.6μg/mL, 0.8μg/mL) for 24 h, they were injected into nude mice, the protein expression of heparanase relevance gene urokinase-type plasminogen activator (uPA), vascular endothelial growth factor (VEGF) in the **tumor** carried by nude mice were observed by using immunohistochem. SP method. The expression of uPA and VEGF proteins in transplanted **tumor** was inhibited by four concentration inhibit **laminarin** sulfate, especially 0.6μg/mL, the inhibitory effect on VEGF was stronger compared with that on uPA, but there was no significant difference between them (P>0.05). There was a significant difference between control group and exptl. group (P<0.05). Observation shows that **laminarin** sulfate can inhibit the expression of uPA and VEGF protein in **tumors** carried by nude mice, indicating that **laminarin** sulfate is an effective inhibitor for invasion and metastasis of **tumors** and can provided a new clue for preventing invasion and metastasis of **tumors** clin.

L4 ANSWER 2 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:394530 CAPLUS
DOCUMENT NUMBER: 142:423818
TITLE: Therapeutical combination against cancer comprising a monoclonal antibody with a glucan
INVENTOR(S): Yvin, Jean-Claude; Panak, Edouard; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 6 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005095250	A1	20050505	US 2003-698034	20031030
WO 2005049044	A1	20050602	WO 2004-EP13119	20041029

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-698034 A 20031030
AB The present invention relates to compns. and methods for treating humans

and warm-blood animals suffering from cancer. More particularly, a therapeutical treatment in which a monoclonal antibody is administered with either β-(1,3)-glucan like **laminarin** or an oligo-β-(1,3)-glucan and a pharmaceutically acceptable carrier, to patients suffering from cancer are described. Female nude mice were implanted s.c. with human breast carcinoma cell line. Mice were injected i.p. with combination of Phycarine 500 mg/kg, once a day for 5 days and Herceptin 0.5 mg/kg, twice a week during 3 wk. The combined administration of Phycarine and Herceptin allowed a limitation in the increase of the **tumor** weight which was far higher than the mean value obtained when administering Herceptin or Phycarine alone; said activity on the **tumor** weight being even equivalent to the one obtained when administering a conventional dosage of taxol.

L4 ANSWER 3 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:58418 CAPLUS
DOCUMENT NUMBER: 141:386
TITLE: Role of selenium in antioxidative effect of heparin-selenocystamine
AUTHOR(S): Saito, Yoshihiro; Tsuda, Tsubasa; Eguchi, Ryoko; Sato, Takaji; Chikuma, Masahiko
CORPORATE SOURCE: Department of Bio-analytical Chemistry, Osaka University of Pharmaceutical Sciences, Osaka, 569-1094, Japan
SOURCE: Biomedical Research on Trace Elements (2003), 14(4), 329-331
CODEN: BRTEE5; ISSN: 0916-717X
PUBLISHER: Nippon Biryo Genso Gakkai
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparin-cystamine (Hep-Cyst), **laminarin**-selenocystamine (Lam-SeCyst), and fucoidan-selenocystamine (Fuc-SeCyst) conjugates were newly synthesized by the same method as that for heparin-selenocystamine (Hep-SeCyst) which we have prepared before. Antioxidative effects of the selenocystamine (SeCyst) conjugates were compared with those of Hep-Cyst to clarify the role of selenium in SeCyst conjugates. Hep-Cyst had thiol groups in the mol., while SeCyst conjugates had selenol groups. At pH 6.0, Hep-SeCyst reacted with DTNB, but Hep-Cyst did not, though both of the conjugates reacted with DTNB at pH 8.0. It is considered that the result is caused by the difference in pKa value of thiol and selenol groups in the conjugates. Both Hep-SeCyst and Hep-Cyst had DPPH radical scavenging activity, and Hep-SeCyst showed higher activity than Hep-Cyst. The viability of Ehrlich ascites **tumor** cells (EATC), which was decreased by DPPH treatment, recovered by the simultaneous addition of SeCyst or Cyst conjugates, indicating that these conjugates have protective effect on EATC from oxidative damages induced by DPPH. The cytoprotective effects of SeCyst conjugates were also higher than that of Hep-Cyst. These results suggested that higher reactivity of selenol groups in SeCyst conjugates may be a primary factor of higher antioxidative activities, i.e., DPPH scavenging activity and cytoprotective activity against DPPH-induced oxidative damage.
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 4 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:434382 CAPLUS
DOCUMENT NUMBER: 139:12302
TITLE: Laminaria polysaccharides for therapeutical treatments
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Laboratoires Goeemar S.A., Fr.
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003045414	A2	20030605	WO 2002-EP13512	20021129
WO 2003045414	A3	20031016		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003119780	A1	20030626	US 2001-999202	20011130
US 6660722	B2	20031209		
CA 2468314	AA	20030605	CA 2002-2468314	20021129
AU 2002352187	A1	20030610	AU 2002-352187	20021129
EP 1448215	A2	20040825	EP 2002-787872	20021129
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1596118	A	20050316	CN 2002-823654	20021129
JP 2005510543	T2	20050421	JP 2003-546915	20021129
PRIORITY APPLN. INFO.:			US 2001-999202 A	20011130
			WO 2002-EP13512 W	20021129

AB A therapeutical method comprises administration to a patient of an effective amount of especially soluble **laminarin** for the treatment of **tumors** and more generally of cancers of the group comprising breast cancer, lung cancer, esophagus cancer, stomach cancer, intestine and colon cancers, and for the treatment of viral, bacterial and fungal diseases as well as diseases related to immunostimulant deficiencies of human beings and warm-blood animals.

L4 ANSWER 5 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:324193 CAPLUS
DOCUMENT NUMBER: 139:345597
TITLE: Study on mechanism of laminarin sulfate in prevention of experimental atherosclerosis
AUTHOR(S): Liang, Xuguo; Du, Xiaoxia; Pan, Qixing
CORPORATE SOURCE: Department of Cardiology, Qilu Hospital, Shangdong University, Jinan, 250012, Peop. Rep. China
SOURCE: Zhongguo Haiyang Yaowu (2002), 21(5), 26-30
CODEN: ZHYAE8; ISSN: 1002-3461
PUBLISHER: Shandongsheng Haiyang Yaowu Kexue Yanjiuso
DOCUMENT TYPE: Journal
LANGUAGE: Chinese

AB The possible immunol. mechanism of **laminarin** sulfate in the prevention of exptl. atherosclerosis was analyzed. Serum soluble interleukin 2 receptor (sIL-2R), circulating immuno-complex, subunits of T lymphocyte, interleukin-6 (IL-6), interleukin-8 (IL-8), **tumor** necrosis factor-α (TNF-α) and lipid metabolism were determined by ELISA, RIA in rats and quails. The lipid metabolism and immunol. function were prominently disturbed in animals after feeding with high-lipid food. **Laminarin** sulfate showed obvious regulating effects on above-mentioned index. The mechanism of **laminarin** sulfate in the prevention of atherosclerosis might be closely related to the regulation of the disturbance of lipid metabolism and to the regulation of the immunol. function of the body.

L4 ANSWER 6 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:321189 CAPLUS

DOCUMENT NUMBER: 139:51655
TITLE: Induction of TNF-α production from human peripheral blood monocytes with β-1,3-glucan oligomer prepared from laminarin with β-1,3-glucanase from Bacillus clausii NM-1
AUTHOR(S): Miyanishi, Nobumitsu; Iwamoto, Yoshiko; Watanabe, Etsuo; Oda, Tatsuya
CORPORATE SOURCE: Department of Food Science and Technology, Tokyo University of Fisheries, Tokyo, 108-8477, Japan
SOURCE: Journal of Bioscience and Bioengineering (2003), 95(2), 192-195
CODEN: JBBIF6; ISSN: 1389-1723
PUBLISHER: Society for Bioscience and Bioengineering, Japan
DOCUMENT TYPE: Journal
LANGUAGE: English

AB We prepared a β-1,3-glucan oligomer (DP≥4) from laminarin (DP: 25-30) derived from Laminaria digitata with β-1,3-glucanase, and examined its effect on human peripheral blood monocytes. Conditioned medium prepared by incubating monocytes (MC-CM) with the β-1,3-glucan oligomer showed strong inhibitory activity against the proliferation of human leukemic U937 cells. Since the β-1,3-glucan oligomer had no direct cytotoxic effect on U937 cells up to 1000 μg/mL, the cytotoxicity of the MC-CM may be due to cytotoxic cytokines produced from monocytes stimulated by the β-1,3-glucan oligomer. On the other hand, the MC-CM prepared with original laminarin had little effect on the growth of U937 cells. The cytotoxicity of the MC-CM prepared with the β-1,3-glucan oligomer was significantly reduced by an anti-TNF-α antibody, but the anti-TNF-β antibody had no effect. Our results suggest that the enzymically depolymd. β-1,3-glucan oligomer induces TNF-α production from human monocytes.

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L4 ANSWER 7 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:319914 CAPLUS
DOCUMENT NUMBER: 138:304468
TITLE: Method of preparing purified biologically active laminarin oligosaccharide libraries
INVENTOR(S): Gulko, Mirit Kolog; Kelson, Idil Kasuto; Grosz-Moraga, Ana; Samokovlisky, Albena; Amor, Yehudit; Markman, Ofer; Shvartser, Leonid
PATENT ASSIGNEE(S): Procognia, Ltd., Israel
SOURCE: PCT Int. Appl., 70 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003033512	A2	20030424	WO 2002-IB4631	20021016
WO 2003033512	C2	20031030		
WO 2003033512	A3	20031224		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2001-329744P P 20011016

AB Disclosed are methods of making **laminarin** oligosaccharide libraries whose members have defined structural and/or functional properties, as well as methods of making and using the **laminarin** oligosaccharide libraries. A protein binding profile of various LS fractions was generated by determining the binding affinity of various fractions to a panel of proteins known to bind oligosaccharide mols. The proteins used included fibroblast growth factor (FGF); antithrombin III (ATIII); epidermal growth factor (EGF); interferon (IFN); insulin-like growth factor (IFN); keratinocyte growth factor (KGF); vascular endothelial growth factor (VEGF); Apolipoprotein E4 (ApoE4); hepatocyte growth factor (HGF); and **tumor** necrosis factor (TNF).

L4 ANSWER 8 OF 19 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:846470 CAPLUS

DOCUMENT NUMBER: 134:172678

TITLE: Synthesis and heparin-like biological activity of amino acid-based polymers

AUTHOR(S): Bentolila, Alfonso; Vlodavsky, Israel; Haloun, Christine; Domb, Abraham J.

CORPORATE SOURCE: Departments of Medicinal Chemistry, School of Pharmacy-Faculty of Medicine, The Hebrew University of Jerusalem, Jerusalem, 91120, Israel

SOURCE: Polymers for Advanced Technologies (2000), 11(8-12), 377-387
CODEN: PADTE5; ISSN: 1042-7147

PUBLISHER: John Wiley & Sons Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 134:172678

AB Biol. macromols. are important regulators of physiol. functions. Most of the biol. active macromols. are charged linear polymers like some proteins, DNA and glycosaminoglycans (GAG). Heparin, the first GAG applied in medicine, is a natural polyanion composed of repeating disaccharide units of glucosamine and uronic acid. The amino and hydroxyl groups of the glucosamine units are partially sulfated. Heparin is a potent anticoagulant, and is also active as an antimethastatic and antiproliferative agent. Sulfatation of other polysaccharides such as **laminarin** yielded very potent new anticoagulants. It was hypothesized that macromols. based on N-acryl L-amino acids bearing hydrophobic or charged side groups, such as -NH2, - COOH, -SH, -OH and phenols, arranged into a configuration determined by the chirality of the amino acid α-carbon, may express heparin-like biol. activities. Homo-poly(N-acryl amino acids) were synthesized from the corresponding monomers. Polymers with different charge densities, nature of the amino acid side group, stereoselectivity and polymeric backbone were tested for their activity as anticoagulants, heparanase inhibition agents, and to basic fibroblast growth factor (b-FGF) release agents bound to the extracellular matrix (ECM). The type of amino acid, the polymer backbone, the charge d. and distribution strongly affect the biol. activity exerted by these polyanions. All polymers being active either as heparanase inhibitors and/or as b-FGF release agents have at least a neg. charge d. of 1 per amino acid residue. Polymers bearing hydrophilic side chains that inhibited heparanase, i.e., hydroxyproline, glycine and serine, did not release b-FGF from ECM. The absence of high acidic sulfate-ester groups existing in heparin (hydrophilic) must be compensated by some kind of lipophilic interactions between the polyanion and b-FGF in order to effectively compete with heparan sulfate proteoglycanes, causing its release from ECM. Heparanase inhibitors may have clin. applications in preventing **tumor** metastasis and inflammatory/autoimmune processes due to the involvement of this enzyme in the extravasation of blood-borne **tumor** cells and activated cells of the immune system. Mols. that release ECM-bound b-FGF may be applied to accelerate

neovascularization and tissue repair.
REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1663260	A1	20060607	EP 2004-787076	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L6 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2000:157159 CAPLUS
DOCUMENT NUMBER: 132:344175
TITLE: Quantitative high-performance liquid chromatographic determination of acrolein in plasma after derivatization with Luminarin 3
AUTHOR(S): Paci, A.; Rieutord, A.; Guillaume, D.; Traore, F.; Ropenga, J.; Husson, H.-P.; Brion, F.
CORPORATE SOURCE: Service de Pharmacie-Toxico-Pharmacologie, Hopital Robert Debre, Paris, 75019, Fr.
SOURCE: Journal of Chromatography, B: Biomedical Sciences and Applications (2000), 739(2), 239-246
CODEN: JCBBEP; ISSN: 0378-4347
PUBLISHER: Elsevier Science B.V.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A rapid, sensitive and specific high-performance liquid chromatog. method for the quantification of acrolein (1), one of the toxic metabolites of oxazaphosphorine alkylating agents (cyclophosphamide and ifosfamide) was developed. Condensation of acrolein with Luminarin 3 afforded a fluorescent derivative that could be specifically detected and quantified. Chromatog. conditions involved a C18 RP column Uptisphere and a gradient elution system to optimize resolution and time anal. The method showed high sensitivity with a limit of detection of 100 p mol/mL and a limit of quantification of 300 p mol/mL. This technique is particularly suitable for pharmacokinetic studies on plasma of oxazaphosphorine-receiving

patients.

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L7 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1663260	A1	20060607	EP 2004-787076	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L10 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:539694 CAPLUS
DOCUMENT NUMBER: 139:277074
TITLE: Synthesis of Laminarin Oligosaccharide Derivatives Having D-Arabinofuranosyl Side-Chains
AUTHOR(S): He, Hongmei; Gu, Guofeng; Du, Yuguo
CORPORATE SOURCE: Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, Peop. Rep. China
SOURCE: Journal of Carbohydrate Chemistry (2003), 22(5), 275-283
CODEN: JCACDM; ISSN: 0732-8303
PUBLISHER: Marcel Dekker, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:277074

AB An efficient glycosylation strategy was applied in the synthesis of β-D-glucopyranosyl-(1,3)-[α-D-arabinopyranosyl-(1,4)]-β-D-glucopyranosyl-(1,3)-β-D-glucopyranosyl-(1,3)-[α-D-arabinopyranosyl-(1,6)]-D-glucopyranose to secure β-D-(1,3)-glycosidic bond formation between glucopyranosyl residues. The new strategy using a 4,6-O-benzylidene acceptor avoided generation of the α major isomer in the attempted β-D-(1,3) glycosylation under standard glycosylation conditions. The hexasaccharide we prepared showed about 30% tumor growth inhibition towards S180 model study.

REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2003:434382 CAPLUS
DOCUMENT NUMBER: 139:12302
TITLE: Laminaria polysaccharides for therapeutical treatments
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Laboratoires Goeemar S.A., Fr.
SOURCE: PCT Int. Appl., 29 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003045414	A2	20030605	WO 2002-EP13512	20021129
WO 2003045414	A3	20031016		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
US 2003119780	A1	20030626	US 2001-999202	20011130
US 6660722	B2	20031209		
CA 2468314	AA	20030605	CA 2002-2468314	20021129
AU 2002352187	A1	20030610	AU 2002-352187	20021129
EP 1448215	A2	20040825	EP 2002-787872	20021129
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
CN 1596118	A	20050316	CN 2002-823654	20021129
JP 2005510543	T2	20050421	JP 2003-546915	20021129

PRIORITY APPLN. INFO.: US 2001-999202 A 20011130
WO 2002-EP13512 W 20021129

AB A therapeutical method comprises administration to a patient of an effective amount of especially soluble laminarin for the treatment of tumors and more generally of cancers of the group comprising breast cancer, lung cancer, esophagus cancer, stomach cancer, intestine and colon cancers, and for the treatment of viral, bacterial and fungal diseases as well as diseases related to immunostimulant deficiencies of human beings and warm-blood animals.

L10 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1996:423114 CAPLUS
DOCUMENT NUMBER: 125:131856
TITLE: Inhibition of angiogenesis and murine tumor growth by laminarin sulfate
AUTHOR(S): Hoffman, R.; Paper, D. H.; Donaldson, J.; Vogl, H.
CORPORATE SOURCE: Clinical Oncology and Radiotherapeutics Unit, MRC Centre, Cambridge, CB2 2QH, UK
SOURCE: British Journal of Cancer (1996), 73(10), 1183-1186
CODEN: BJCAAI; ISSN: 0007-0920
PUBLISHER: Stockton
DOCUMENT TYPE: Journal
LANGUAGE: English

AB LAM S5 is a polysulfated derivative of the glucan laminarin that inhibits basic fibroblast growth factor (bFGF) binding and the bFGF-stimulated proliferation of fetal bovine heart endothelial (FBHE) cells. This report demonstrates that LAM S5 has anti-angiogenic activity, as shown by inhibition of tubule formation by endothelial cells cultured on Matrigel and inhibition of vascularization of the chick chorioallantoic membrane. In addition, LAM S5 caused a tumor growth delay of the murine RIF-1 tumor of 2.6 days.

L10 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1995:995021 CAPLUS
DOCUMENT NUMBER: 124:37695
TITLE: Pharmaceutical compositions containing laminarin sulfate
INVENTOR(S): Vlodavsky, Israel; Miao, Hua-Quan
PATENT ASSIGNEE(S): Hadasit Medical Research Services and Development Co., Ltd., Israel; Whalley, Kevin
SOURCE: PCT Int. Appl., 45 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9524907	A2	19950921	WO 1995-GB515	19950310
WO 9524907	A3	19951109		
W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TT, UA				
RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9518567	A1	19951003	AU 1995-18567	19950310

PRIORITY APPLN. INFO.: IL 1994-108951 A 19940313
WO 1995-GB515 W 19950310

AB A pharmaceutical composition containing sodium laminarin sulfate for mimicking heparin activity and for therapeutic use instead of heparin, in preventing

restenosis by the inhibition of vascular smooth muscle cell proliferation; in accelerating wound healing by activating the release of active growth factors stored in the extra-cellular matrix; and for inhibiting tumor cell metastasis by inhibition of heparanase activity.

L10 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1993:5588 CAPLUS
DOCUMENT NUMBER: 118:5588
TITLE: In vitro induction of cecropin genes. An immune response in a Drosophila blood cell line
AUTHOR(S): Samakovlis, Christos; Aasling, Bengt; Boman, Hans G.; Gateff, Elisabeth; Hultmark, Dan
CORPORATE SOURCE: Dep. Biol., Stockholm Univ., Stockholm, S-106 91, Swed.
SOURCE: Biochemical and Biophysical Research Communications (1992), 188(3), 1169-75
CODEN: BBRCA9; ISSN: 0006-291X
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The Drosophila melanogaster cell line mbn-2 was explored as a model system to study insect immune responses in vitro. This cell line is of blood cell origin, derived from larval hemocytes of the mutant lethal (2) malignant blood **neoplasm** (l(2)mbn). The mbn-2 cells respond to microbial substances by the activation of cecropin genes, coding for bactericidal peptides. The response is stronger than that previously described for SL2 cells, and 4 other tested Drosophila cell lines were totally unresponsive. Bacterial lipopolysaccharide, algal **laminarin** (a β-1,3-glucan), and bacterial flagellin were strong inducers, bacterial peptidoglycan fragments gave a weaker response, whereas a formyl-methionine-containing peptide had no effect. Expts. with different drugs indicate that the response may be mediated by a G protein, but not by protein kinase C or eicosanoids, and that it requires a protein factor with a high rate of turnover.

L10 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1966:441776 CAPLUS
DOCUMENT NUMBER: 65:41776
ORIGINAL REFERENCE NO.: 65:7840d-f
TITLE: Comparative study of the biological action of polysaccharides glucan and laminarin
AUTHOR(S): Fomina, I. P.; Navashin, S. M.; Preobrazhenskaya, M. E.; Rozenfel'd, E. L.
CORPORATE SOURCE: Res. Inst. Antibiots., Moscow
SOURCE: Byulleten Eksperimental'noi Biologii i Meditsiny (1966), 61(5), 79-83
CODEN: BEBMAE; ISSN: 0365-9615
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB Albino mice were used for comparing biol. activity of glucan and laminarin. In the 1st series of expts., the animals were injected with glucan or laminarin in doses of 5-30 mg./kg., and then subjected to the action of following microorganisms: [Salmonella typhosa [Bacillus] dysenteriae sonne [Shigella sonne], Escherichia coli, Proteus mirabilis, Pseudomonas aeruginosa, Staph[ylococcus] aureus, S. albus, and D[iplococcus] pneumoniae. Glucan and laminarin produced nearly identical preventive effects in exptl. staphylococcic sepsis: the survival of treated animals was 76-83%, whereas the death rate of controls was 90%. In sepsis induced by gram-neg. microorganisms, glucan showed a favorable influence, while laminarin proved ineffective. In the 2nd exptl. series, an antitumor effect of both polysaccharides was observed. Glucan, 20 mg./kg. produced a pronounced antitumor effect against Ehrlich tumor and sarcoma 180, inhibiting their growth by 53-60%. No inhibitory activity of laminarin was found under analogous conditions. Since both polysaccharides were of the same mol. structure, it is suggested that

different biol. activities was due to their size and configuration. This explanation is supported by a reduction in glucan biol. activity after splitting off some of its glucose residues.

L10 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1960:120399 CAPLUS
DOCUMENT NUMBER: 54:120399
ORIGINAL REFERENCE NO.: 54:23051a-b
TITLE: The inhibition of tumor growth and deoxyribonuclease II by anionic polyelectrolytes
AUTHOR(S): Regelson, William; Tunis, Marvin; Kuhar, Stephan
CORPORATE SOURCE: Roswell Park Mem. Inst., Buffalo, NY
SOURCE: Acta Unio Internationalis contra Cancrum (1960), 16, 729-34
CODEN: AICCA6; ISSN: 0365-3056
DOCUMENT TYPE: Journal
LANGUAGE: English
AB cf. CA 52, 10410h. A wide variety of anionic polyelectrolytes were found to produce appreciable inhibition in one or more exptl. tumors. Deoxyribonuclease II activity in homogenates of tumor was inhibited by polyethylene sulfonate in concns. comparable to those producing tumor inhibition in vivo.

L10 ANSWER 8 OF 8 MEDLINE on STN
ACCESSION NUMBER: 93075210 MEDLINE
DOCUMENT NUMBER: PubMed ID: 1445351
TITLE: In vitro induction of cecropin genes--an immune response in a Drosophila blood cell line.
AUTHOR: Samakovlis C; Asling B; Boman H G; Gateff E; Hultmark D
CORPORATE SOURCE: Department of Molecular Biology, Stockholm University, Sweden.
SOURCE: Biochemical and biophysical research communications, (1992 Nov 16) Vol. 188, No. 3, pp. 1169-75.
Journal code: 0372516. ISSN: 0006-291X.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199212
ENTRY DATE: Entered STN: 22 Jan 1993
Last Updated on STN: 3 Feb 1997
Entered Medline: 22 Dec 1992
AB The Drosophila melanogaster cell line mbn-2 was explored as a model system to study insect immune responses in vitro. This cell line is of blood cell origin, derived from larval hemocytes of the mutant lethal (2) malignant blood **neoplasm** (1(2)mbn). The mbn-2 cells respond to microbial substances by the activation of cecropin genes, coding for bactericidal peptides. The response is stronger than that previously described for SL2 cells, and four other tested Drosophila cell lines were totally unresponsive. Bacterial lipopolysaccharide, algal **laminarin** (a beta-1,3-glucan), and bacterial flagellin were strong inducers, bacterial peptidoglycan fragments gave a weaker response, whereas a formyl-methionine-containing peptide had no effect. Experiments with different drugs indicate that the response may be mediated by a G protein, but not by protein kinase C or eicosanoids, and that it requires a protein factor with a high rate of turnover.

L11 ANSWER 1 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2005:259651 CAPLUS
DOCUMENT NUMBER: 142:291363
TITLE: Chemotherapeutic antineoplastic treatment
INVENTOR(S): Yvin, Jean-Claude; Vetvicka, Vaclav
PATENT ASSIGNEE(S): Fr.
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005065111	A1	20050324	US 2003-668661	20030923
WO 2005027938	A1	20050331	WO 2004-EP10993	20040916
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1663260	A1	20060607	EP 2004-787076	20040916
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				

PRIORITY APPLN. INFO.: US 2003-668661 A 20030923
WO 2004-EP10993 W 20040916

AB Chemotherapeutic method for the treatment of cancer comprising administration of an effective amount of an antineoplastic agent in conjunction with an effective amount of a β-1,3 glucan is disclosed.

L11 ANSWER 2 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1977:418498 CAPLUS
DOCUMENT NUMBER: 87:18498
TITLE: Glycohydrolase contamination of commercial enzymes frequently used in the preparation of fungal cell walls
AUTHOR(S): Davis, Thomas E., Jr.; Domer, Judith E.
CORPORATE SOURCE: Sch. Med., Tulane Univ., New Orleans, LA, USA
SOURCE: Analytical Biochemistry (1977), 80(2), 593-600
CODEN: ANBCA2; ISSN: 0003-2697
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Com. enzyme prepns. frequently used in the preparation of fungal cell walls, i.e., proteases, a lipase, and a phosphatase, were examined for the presence of contaminating glycohydrolase activity, since such activity could result not only in the removal of cytoplasmic constituents but also in the removal of portions of the wall itself. Glucosidase activities were detected in a protease of fungal origin, in a lipase from wheat germ, and in a phosphatase from potatoes. Addnl., 2 com. protease prepns. from Streptomyces griseus contained β-1,3-glucanase activity in significant amts., a 3rd contained trace amts. of the glucanase, but a 4th was totally free of glycohydrolase activity. The protease prepns. from S. griseus released laminaribiose from yeast-phase cell walls of Histoplasma capsulatum **chemotypes** I and II, but only trace amts. of glucose were released. One protease was examined more closely and was optimally active on **laminarin** at pH 5.5 and 50°. It was also

highly active on the same substrate at pH 8.0 and 37° however. A protease preparation from Aspergillus oryzae released glucose from the yeast-phase cell walls of H. capsultum **chemotypes** I and II as well as from cell walls of Blastomyces dermatitidis, suggesting that the preparation contained both α- and β-glucanases.

L11 ANSWER 3 OF 3 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1963:411272 CAPLUS
DOCUMENT NUMBER: 59:11272
ORIGINAL REFERENCE NO.: 59:2057e-h
TITLE: Experimental eosinophilia. IV. Eosinotactic influences of polysaccharides
AUTHOR(S): Cohen, Sheldon G.; Sapp, Theresa M.
CORPORATE SOURCE: Wilkes Coll., Wilkes-Barre, PA
SOURCE: Experimental and Molecular Pathology (1963), 2, 74-82
CODEN: EXMPA6; ISSN: 0014-4800
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB cf. J. Allergy 32, 214(1961). Injection of heterologous and homologous glycogen, soluble starch amylodextrin, starch amylopectin, **laminarin**, inulin, or high mol. weight dextran into the rabbit foot pad resulted in 4-hr. eosinophilic granular cell infiltrations into the sinuses of regional popliteal lymph nodes. Similar histol. alterations could not be demonstrated with their component monosaccharides or with other noncarbohydrate macromol. histamine-releasing agents, including acacia, stilbamadine, peptone, trypsin, polyvinylpyrrolidone, or polymyxin B. The eosinotactic effects of glycogen were studied through the use of inhibitors and antagonists, but these effects could not be related to release of histamine, serotonin, or heparin. Absorption of normal rabbit serums with group O and A erythrocytes did not effect any change in their originally demonstrated capacity to precipitate with amylodextrin, amylopectin, and **laminarin**. Saline eluates of serum-treated group A erythrocytes did not precipitate with amylodextrin and **laminarin**, but did develop precipitation bands with amylopectin in 2 instances. The polysaccharides were ineffective in reducing anti-A hemagglutinating capacity of the normal rabbit serum. Granule aggregate formation was noted only with starch amylodextrin and starch amylopectin when treated with normal rabbit serum. Normal rabbit serums that failed to demonstrate precipitation with glycogens, inulin, **laminarin**, and dextrans also failed to agglutinate group O erythrocytes coated with these polysaccharides. Precipitation of amylodextrin and amylopectin by normal serums suggests the possibility of participation of some polysaccharides in immune reactions with preformed antibody. However, the eosinotactic effects of polysaccharides could not be related to immunologic phenomena or **chemotactic** action.

```
=> d his

     (FILE 'HOME' ENTERED AT 11:52:36 ON 28 JUN 2006)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 11:52:43 ON 28 JUN 2006
L1             2 S CYCLOPHOSPHAMIDE (P) LAMINARIN
L2          8649 S CYCLOPHOSPHAMIDE (P) CANCER?
L3             5 S LAMINARIN (P) CANCER?
L4            19 S LAMINARIN (P) TUMOR?
L5             0 S LAMINARIN (P) TUMOR? (P) CYCLOPHOSPHAMIDE?
L6             2 S LAMINARIN (P) CYCLOPHOSPHAMIDE?
L7             1 S LAMINARIN (P) ANTINEOPLAS?
L8             0 S LAMINARIN (P) ANTICANCER?
L9             0 S LAMINARIN (P) ANTI-CANCER?
L10            8 S LAMINARIN (P) NEOPLASM?
L11            3 S LAMINARIN (P) CHEMOT?
L12            1 S L2 AND LAMINARIN?
L13            0 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVMENT
L14          432 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVEMENT
L15            0 S L14 AND ?GLUCAN?
L16            0 S L14 AND GLUCAN?
L17            0 S L14 AND LAMINARIN?
L18            0 S ANTINEOPLASTIC AGENT? (P) CANCER? (P) LAMINARIN?
L19            0 S ANTINEOPLASTIC AGENT? (P) TUMOR? (P) LAMINARIN?
L20            0 S ANTICANCER AGENT? (P) TUMOR? (P) LAMINARIN?
L21            0 S ANTICANCER AGENT? (P) LAMINARIN?
L22            0 S ANTINEOPLASTIC AGENT? (P) LAMINARIN?
L23            0 S ANTICANCER AGENT? (P) LAMINARIN?
```

L24 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:14722 CAPLUS
DOCUMENT NUMBER: 144:327875
TITLE: Defense and resistance-inducing activities in tobacco of the sulfated β-1,3 glucan PS3 and its synergistic activities with the unsulfated molecule
AUTHOR(S): Menard, Rozenn; de Ruffray, Patrice; Fritig, Bernard; Yvin, Jean-Claude; Kauffmann, Serge
CORPORATE SOURCE: Institut de Biologie Moleculaire des Plantes du CNRS, Universite Louis Pasteur, Strasbourg, 67084, Fr.
SOURCE: Plant and Cell Physiology (2005), 46(12), 1964-1972
CODEN: PCPHA5; ISSN: 0032-0781
PUBLISHER: Japanese Society of Plant Physiologists
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Laminarin**, a β-1,3 glucan with single β-glucose branches at position 6, was chemical sulfated to produce PS3 with a degree of sulfation of 2.4. PS3 has previously been shown to activate the salicylic acid (SA) signaling pathway in infiltrated tobacco and Arabidopsis thaliana leaf tissues. Here, we investigated whether PS3 induces systemic defense and resistance responses in tobacco. Using a radiolabeled compound, it was first demonstrated that PS3 remains strictly localized to the infiltrated tissues. PS3 is also resistant to β-glucanase degradation In transgenic PR1-β-glucuronidase (GUS) tobacco plants, PS3 causes a strong increase in GUS activity in treated tissues but none in untreated leaves. PS3-infiltrated tissues challenged with tobacco mosaic virus (TMV) 8 days after elicitor application show a decrease in both the lesion number and the lesion size, whereas treatment with **laminarin**, the unsulfated native glucan, affected only the lesion number PS3 does not induce systemic acquired resistance to TMV. PS3 and **laminarin** show **synergistic** effects in promoting the oxidative burst in tobacco cell suspensions and in increasing the expression of genes encoding O-methyltransferases of the phenylpropanoid pathway in tobacco plants. No **synergistic** effect was observed on the expression of either the SA-dependent acidic PR1 gene or the ethylene-dependent basic PR5 gene in tobacco plants.
REFERENCE COUNT: 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:389507 CAPLUS
DOCUMENT NUMBER: 141:152904
TITLE: The Family 6 Carbohydrate Binding Module CmCBM6-2 Contains Two Ligand-binding Sites with Distinct Specificities
AUTHOR(S): Henshaw, Joanna L.; Bolam, David N.; Pires, Virginia M. R.; Czjzek, Mirjam; Henrissat, Bernard; Ferreira, Luis M. A.; Fontes, Carlos M. G. A.; Gilbert, Harry J.
CORPORATE SOURCE: School of Cell and Molecular Biosciences, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, UK
SOURCE: Journal of Biological Chemistry (2004), 279(20), 21552-21559
CODEN: JBCHA3; ISSN: 0021-9258
PUBLISHER: American Society for Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The microbial degradation of the plant cell wall is an important biol. process, representing a major component of the carbon cycle. Enzymes that mediate the hydrolysis of this composite structure are modular proteins that contain non-catalytic carbohydrate binding modules (CBMs) that enhance catalytic activity. CBMs are grouped into sequence-based

families, and in a previous study we showed that a family 6 CBM (CBM6) that interacts with xylan contains two potential ligand binding clefts, designated cleft A and cleft B. Mutagenesis and NMR studies showed that only cleft A in this protein binds to xylan. Family 6 CBMs bind to a range of polysaccharides, and it was proposed that the variation in ligand specificity observed in these proteins reflects the specific cleft that interacts with the target carbohydrate. Here the biochem. properties of the C-terminal cellulose binding CBM6 (CmCBM6-2) from Cellvibrio mixtus endoglucanase 5A were investigated. The CBM binds to the β1,4-β1,3-mixed linked glucans lichenan and barley β-glucan, cello-oligosaccharides, insol. forms of cellulose, the β1,3-glucan **laminarin**, and xylooligosaccharides. Mutagenesis studies, informed by the crystal structure of the protein (presented in the accompanying paper, Pires, V. M. R., Henshaw, J. L., Prates, J. A. M., Bolam, D., Ferreira, L. M. A. Fontes, C. M. G. A., Henrissat, B., Planas, A., Gilbert, H. J., Czjzek, M. (2004) J. Biol. Chemical 279, 21560-21568), show that both cleft A and B can accommodate cello-oligosaccharides and **laminarin** displays a preference for cleft A, whereas xylooligosaccharides exhibit absolute specificity for this site, and the β1,4,-β1,3-mixed linked glucans interact only with cleft B. The binding of CmCBM6-2 to insol. cellulose involves **synergistic** interactions between cleft A and cleft B. These data show that CmCBM6-2 contains two binding sites that display differences in ligand specificity, supporting the view that distinct binding clefts with different specificities can contribute to the variation in ligand recognition displayed by family 6 CBMs. This is in sharp contrast to other CBM families, where variation in ligand binding is a result of changes in the topol. of a single carbohydrate-binding site.

REFERENCE COUNT: 43 THERE ARE 43 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1999:776906 CAPLUS

DOCUMENT NUMBER: 132:104504

TITLE: **Synergistic** interactions among β-**laminarinase**, β-1,4-glucanase, and β-glucosidase from the hyperthermophilic archaeon Pyrococcus furiosus during hydrolysis of β-1,4-, β-1,3-, and mixed-linked polysaccharides

AUTHOR(S): Driskill, Lance E.; Bauer, Michael W.; Kelly, Robert M.

CORPORATE SOURCE: Department of Chemical Engineering, North Carolina State University, Raleigh, NC, 27695, USA

SOURCE: Biotechnology and Bioengineering (1999), 66(1), 51-60
CODEN: BIBIAU; ISSN: 0006-3592

PUBLISHER: John Wiley & Sons, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The **synergistic** interaction among three β-specific glycosidases from the hyperthermophilic archaeon Pyrococcus furiosus, namely two endoglucanases (EglA and LamA) and an exo-acting β-glucosidase (Bgl), on barley-glucan and **laminarin**, was examined In addition to following glucose release and the generation of reducing sugar ends, the distribution and amts. of oligomeric products from β-1,3- and β-1,4-linked substrates were determined as a function of extent of hydrolysis at 98°C. Pos. interactions were noted between endo/exo glucanase combinations, leading to enhanced and rapid degradation of the larger complex carbohydrates to oligosaccharides. The EglA/LamA endo-acting combination was also **synergistic** in degrading barley-glucan. However, hydrolysis was most efficient when a blend of all three hydrolases was used, possibly due to the relief of product inhibition by the exoglycosidase. Furthermore, by monitoring the distribution of oligosaccharides present during hydrolysis, patterns of enzymic attack could be followed in addition to determining the specific

contributions of each hydrolase to the overall process.
REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L24 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1997:142112 CAPLUS
DOCUMENT NUMBER: 126:263094
TITLE: Tachycitin, a small granular component in horseshoe crab hemocytes, is an antimicrobial protein with chitin-binding activity
AUTHOR(S): Kawabata, Shun-ichiro; Nagayama, Ranko; Hirata, Michimasa; Shigenaga, Takeshi; Agarwala, Kishan Lal; Saito, Tetsu; Cho, Junko; Nakajima, Hiroshi; Takagi, Toshio; Iwanaga, Sadaaki
CORPORATE SOURCE: Dep. Biol., Kyushu Univ., Fukuoka, 812-81, Japan
SOURCE: Journal of Biochemistry (Tokyo) (1996), 120(6), 1253-1260
CODEN: JOBIAO; ISSN: 0021-924X
PUBLISHER: Japanese Biochemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Small granules of horseshoe crab hemocytes contain two known major antimicrobial substances, tachyplesin and big defensin (S5), and at least five protein components (S1 to S6), with unknown functions. In the present study, the authors examined the biol. properties and primary structure of a small granular component S2, named tachycitin. This component was purified from the acid extract of hemocyte debris by two steps of chromatog. The purified tachycitin was a single chain protein with an apparent Mr = 8,500 on Tricine-SDS-PAGE. Ultracentrifugation anal. revealed tachycitin to be present in monomer form in solution Tachycitin inhibited the growth of both Gram-neg. and -pos. bacteria, and fungi, with a bacterial agglutinating property. Moreover, tachycitin and big defensin acted **synergistically** in antimicrobial activities. The amino acid sequence and intrachain disulfide bonds of tachycitin were determined by amino acid and sequence analyses of peptides produced by enzymic cleavages. The mature tachycitin consisted of 73 amino acid residues containing five disulfide bonds with no N-linked sugar. A cDNA coding for tachycitin was isolated from a hemocyte cDNA library. The open reading frame coded for an NH2-terminal threonine amide released after digestion of tachycitin with lysylendopeptidase was identified. The NH2-terminal 28 residues of tachycitin shows sequence homol. to a part of chitin-binding regions found in antifungal chitin-binding peptides, chitin-binding lectins, and chitinases, all of which have been isolated from plants. Tachycitin showed a specific binding to chitin but did not bind with the polysaccharides cellulose, mannan, xylan, and **laminarin**. Tachycitin may represent a new class of chitin-binding protein family in animals.

L24 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1993:208259 CAPLUS
DOCUMENT NUMBER: 118:208259
TITLE: Hydrolytic properties of two cellulases of Trichoderma reesei expressed in yeast
AUTHOR(S): Bailey, Michael J.; Siika-Aho, Matti; Valkeajarvi, Anne; Penttila, Merja E.
CORPORATE SOURCE: Biotech. Lab., VTT, Espoo, Finland
SOURCE: Biotechnology and Applied Biochemistry (1993), 17(1), 65-76
CODEN: BABIEC; ISSN: 0885-4513
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Two cellulases of T. reesei, cellobiohydrolase II (CBHII; EC 3.2.1.91) and endoglucanase I (EGI; EC 3.2.1.4), produced in recombinant strains of Saccharomyces cerevisiae, were tested in the hydrolysis of cellulose,

xylan, and other polymeric substrates. Both enzymes were active against unsubstituted, insol. cellulose. CBHII had greater activity than EGI against crystalline cellulose, whereas in the case of the amorphous substrate the order was reversed. Evidence for **synergism** was obtained when mixts. of the 2 enzymes were used with a constant total protein dosage. EGI was also active against soluble substituted cellulose derivs., whereas the activity of CBHII against these substrates was insignificant. Both enzymes were active against barley (1→3,1→4)-β-glucan, but were inactive against (1→3,1→6)-β-glucan (**laminarin**). An apparent low-mannan-degrading activity of EGI against locust-bean (Ceratonia siliqua) gum galactomannan was not confirmed when homopolymeric mannan was used as substrate in a prolonged hydrolysis test. EGI exhibited considerably greater activity against insol., unsubstituted hardwood xylan than against amorphous cellulose. Soluble 4-O-methylgluconoxylan was also attacked by EGI, although to a somewhat lesser extent than the unsubstituted xylan. By comparison with 2 purified xylanases of T. reesei, EGI produced xylooligosaccharides with a longer mean chain length when acting on both substituted and unsubstituted xylan substrates. CBHII was inactive against xylan.

L24 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1989:209146 CAPLUS
DOCUMENT NUMBER: 110:209146
TITLE: Induction of cellulase formation in Trichoderma reesei by cellobiono-1,5-lactone
AUTHOR(S): Iyayi, C. B.; Bruchmann, E. E.; Kubicek, C. P.
CORPORATE SOURCE: Inst. Biochem. Technol. Mikrobiol., TU Wien, Vienna, A-1060, Austria
SOURCE: Archives of Microbiology (1989), 151(4), 326-30
CODEN: AMICCW; ISSN: 0302-8933
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Induction of synthesis of cellulolytic enzymes in T. reesei QM 9414 by cellobiono-1,5-lactone (CBL) was investigated in a replacement system lacking an addnl. C source. CBL induced cellulase secretion optimally at pH 5 and a concentration of 70 μg/mL. Higher concns. lead to lower induction. De novo induction of cellulases was proven by the inhibitory effect of cycloheximide addition Induction by CBL acted **synergistically** on induction by sophorose, as it decreased the concentration of sophorose required for maximum induction. Maximum endo-β-1,4-glucanase activities induced by either sophorose or CBL were comparable. The CBL-induced cellulase system contained all the major cellulolytic enzymes of T. reesei, i.e. cellobiohydrolase I and II, and endoglucanase I, as shown by SDS-PAGE, Western blotting, and detection with specific mono- and polyclonal antibodies. No differences were seen in the types of individual enzymes formed upon induction by either sophorose or CBL. No other hydrolytic enzymes appear to be induced by CBL (i.e. amylase, **laminarinase**, xylanase).

L24 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1981:116688 CAPLUS
DOCUMENT NUMBER: 94:116688
TITLE: Substrate specificity and mode of action of the cellulases from the thermophilic fungus Thermoascus aurantiacus
AUTHOR(S): Shepherd, Maxwell G.; Tong, Chow Ching; Cole, Anthony L.
CORPORATE SOURCE: Dep. Biochem., Univ. Otago, Dunedin, N. Z.
SOURCE: Biochemical Journal (1981), 193(1), 67-74
CODEN: BIJOAK; ISSN: 0306-3275
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Three cellulases purified from T. aurantiacus partially degraded native cellulose. Cellulase I, but not cellulases II and III, readily hydrolyzed

the mixed β-1,3;β-1,6-polysaccharides such as carboxymethylpachyman, yeast glucan, and **laminarin**. Both cellulose I and a β-glucosidase also purified from T. aurantiacus degraded xylan, this activity possibly being an intrinsic property of these enzymes. Lichenin (β-1,4;β-1,3) was degraded by all 3 cellulases. Cellulase II could not degrade CM-cellulose; with filter paper as substrate, the end product was cellobiose, which indicated that cellulase II was an exo-β-1,4-glucan cellobiohydrolase. Degradation of cellulose (filter paper) was catalyzed independently by each of the 3 cellulases, with no **synergistic** effects. Cellulose III cleaved cellulodextrins preferentially at the central linkages and rapidly reduced the viscosity of CM-cellulose, suggesting an endocellulase activity. The rate of hydrolysis increased with the chain length of reduced cellulodextrins. The specificity region of cellulase III is therefore 5 or 6 glucose units in length.

L24 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1980:421420 CAPLUS
DOCUMENT NUMBER: 93:21420
TITLE: Lyticase: endoglucanase and protease activities that act together in yeast cell lysis
AUTHOR(S): Scott, Janet H.; Schekman, Randy
CORPORATE SOURCE: Biochem. Dep., Univ. California, Berkeley, CA, 94720, USA
SOURCE: Journal of Bacteriology (1980), 142(2), 414-23
CODEN: JOBAAY; ISSN: 0021-9193
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Yeast cell-lytic activity was purified from the culture supernatant of Oerskovia xanthineolytica grown on minimal medium with insol. yeast glucan as the C source. The lytic activity consisted of 2 **synergistic** enzyme activities which copurified on CM-cellulose and Sephadex G-150, but were resolved on Bio-Gel P-150. The 1st component was a β-1,3-glucanase with a mol. weight of 55,000. The Km for yeast glucan was 0.4 mg/mL; that for **laminarin** was 5.9 mg/mL. Hydrolysis of β-1,3-glucans was endolytic, yielding a mixture of products ranging from glucose to oligomers of ≥10 units. The size distribution of products was pH dependent, smaller oligomers predominating at the lower pH. The glucanase was unable to lyse yeast cells without 2-mercaptoethanol or the 2nd lytic component, an alkaline protease. Neither of these agents had any effect on the glucanase activity on polysaccharide substrates. The protease had a mol. weight of 30,000 and hydrolyzed Azocoll and a variety of denatured proteins. The enzyme was unusual in that it had an affinity for Sephadex. Although the activity was insensitive to most protease inhibitors, it was affected by polysaccharides; yeast mannan was a potent inhibitor. The enzyme did not have any mannanase activity. Neither Pronase nor trypsin could substitute for this protease in promoting yeast cell lysis. A partially purified fraction of the enzymes, easily obtained with a single purification step, had a high lytic specific activity and was superior to com. prepns. with regard to nuclease, protease, and chitinase contamination. Lyticase was applied in spheroplast, membrane, and nucleic acid isolation, and proved useful in yeast transformation procedures.

L24 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1979:50323 CAPLUS
DOCUMENT NUMBER: 90:50323
TITLE: β-1,3-Glucanase from Cellulase "Onozuka" SS and its lytic capability
AUTHOR(S): Bielecki, Stanislaw; Galas, Edward
CORPORATE SOURCE: Dep. Ferment. Technol., Osaka Univ., Osaka, Japan
SOURCE: Bioconvers. Cellul. Subst. Energy, Chem. Microb. Protein, Symp. Proc., [1st] (1978), Meeting Date 1977, 203-25. Editor(s): Ghose, T. K. Indian Inst.

Technol.: New Delhi, India.
CODEN: 39MNAZ
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The β-1,3-glucanase (I) from the com. preparation, cellulase Onozuka SS, was partially purified by adsorption on Avicel, acetone precipitation, DEAE-Sephadex chromatog., and Sephadex G-100 gel-filtration. The purified I preparation showed 2 weakly separated bands in Na dodecyl sulfate-polyacrylamide gel electrophoresis; CM-cellulose-decomposing enzyme was still present in the preparation The optimal conditions for **laminarin** hydrolysis by I were pH 5.2 at 59° for 20 min. Metal ions (except for Ag+), monoiodoacetic acid, and EDTA had no effect on I activity. The Km for **laminarin** was 0.285 mg/mL. I did not lyse acetone-dried yeast cells alone, but a **synergistic** effect was observed with Pronase and a factor separated during purification by ultrafiltration on a UM-10 membrane. The factor had lytic activity against acetone-dried yeast cells and a mol. weight of <10,000. It was not inactivated by boiling or incubation with trypsin. After incubation with Pronase, it lost 60% of its activity, and after hydrolysis with 6N HCl, 90% activity was lost. The factor was insol. in EtOAc and MeOH but readily soluble in water.

L24 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1976:146641 CAPLUS
DOCUMENT NUMBER: 84:146641
TITLE: Lysis of yeast cell walls. Lytic β-(1 → 3)-glucanases from Bacillus circulans WL-12
AUTHOR(S): Rombouts, Frank M.; Phaff, Herman J.
CORPORATE SOURCE: Dep. Food Sci. Technol., Univ. California, Davis, CA, USA
SOURCE: European Journal of Biochemistry (1976), 63(1), 121-30
CODEN: EJBCAI; ISSN: 0014-2956
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bacillus curculans WL-12, when grown in a mineral medium with yeast cell walls or yeast glucan as the sole C source, produced 5 β-glucanases. Two β-(1 → 3)-glucanases (I and II), which are lytic to yeast cell walls, were isolated from the culture liquid by batch adsorption on yeast glucan, and separated by chromatog. on hydroxylapatite. Lytic β-(1 → 3)-glucanase I was further purified by CM-cellulose chromatog. The specific activity of lytic β(1 → 3)-glucanase I on **laminarin** was 4.1 units/mg of protein. The enzyme moved a single protein with a mol. weight of 40,000 during Na dodecyl sulfate-polyacrylamide electrophoresis in slab gels. It was specific for the β-(1 → 3)-glucosidic bond, but did not hydrolyze laminaribiose. Hydrolysis of **laminarin** went through a series of oligosaccharides, and laminaribiose and glucose accumulated till the end of the reaction. A small amount of gentiobiose was also produced from **laminarin**. Products from yeast cell walls and yeast glucan included laminaripentaose, laminaritriose, laminaribiose, glucose, and gentiobiose, but no laminaritetraose was detected. This glucanase has an optimum pH of 5.5. **Laminarin** hydrolysis followed Michaelis-Menten kinetics. A Km of 0.105 mg of **laminarin**/ml and a V of 5.6 microequivalents of glucose released/min/mg enzyme protein were calculated The enzyme required no metal ions. The lytic β-(1 → 3)-glucanase I is a powerfully lytic enzyme, completely solubilizing the glucan of yeast cell walls. **Synergism** with lytic β-(1 → 6)-glucanase could be observed during yeast glucan hydrolysis. Lytic β-(1 → 3)-gluanase II could be further purified by CM-cellulose and DEAE-agarose chromatog. At this stage lytic β-(1 → 3)-glucanase II was still contaminated with some nonlytic β-(1 → 3)-glucanase that could not be removed by any further chromatog. steps. The enzyme has an optimum pH of 6.5-7; its properties were not studied further.

L24 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 1963:54552 CAPLUS
DOCUMENT NUMBER: 58:54552
ORIGINAL REFERENCE NO.: 58:9369g-h,9370a
TITLE: Enzymic degradation of laminarin. II. The multicomponent nature of fungal laminarinases
AUTHOR(S): Chesters, C. G. C.; Bull, A. T.
CORPORATE SOURCE: Univ. Nottingham, UK
SOURCE: Biochemical Journal (1963), 86, 31-8
CODEN: BIJOAK; ISSN: 0264-6021
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB The degradation of **laminarin** by fungi is achieved by a family of closely related enzymes. These enzymes were fractionated by adsorption and paper chromatography and have been found to comprise an exo-β-D-(1 → 3)-glucanase, one or more endo-β-D-(1 → 3)-glucanases, and a β-glucosidase of low specificity. Individual enzymes have been obtained in a relatively pure state by refractionation on Ca hydroxyapatite and their action on insol. **laminarin** and laminaridextrins were studied and compared with the action of the unfractionated complex. Fungi almost invariably possessed both exo- and endo-β-D-(1 → 3)-glucanases; the sole exception was the **laminarinase** prepared from Penicillium stipitatum, which lacks an exohydrolytic component. A spectrum of **laminarinase** types has been recognized, ranging from those having predominantly exohydrolytic activity to those with a predominantly endohydrolytic action on **laminarin**. An examination of the **laminarinase** of Myrothecium verrucaria IMI 25291 suggested that the individual enzyme components exerted a **synergistic** effect on one another and a scheme of **laminarin** hydrolysis has been presented. In a few **laminarin** hydrolyzates D-mannose was repeatedly detected, but chemical analysis of the **laminarin** used has failed to reveal its presence. Mannitol and β-(1 → 6)-linked glucosides have also been observed during **laminarin** degradation and the tentative identification of 3,6-di-O-β-glucosyl-D-glucose in such hydrolyzates suggested that β-(1 → 6)-linked branch points occur in the **laminarin** mol.

L24 ANSWER 12 OF 17 MEDLINE on STN
ACCESSION NUMBER: 2005694388 MEDLINE
DOCUMENT NUMBER: PubMed ID: 16215271
TITLE: Defense and resistance-inducing activities in tobacco of the sulfated beta-1,3 glucan PS3 and its synergistic activities with the unsulfated molecule.
AUTHOR: Menard Rozenn; de Ruffray Patrice; Fritig Bernard; Yvin Jean-Claude; Kauffmann Serge
CORPORATE SOURCE: Institut de Biologie Moleculaire des Plantes du CNRS, Universite Louis Pasteur, 12 rue du General Zimmer, 67084 Strasbourg, France.
SOURCE: Plant & cell physiology, (2005 Dec) Vol. 46, No. 12, pp. 1964-72. Electronic Publication: 2005-10-08.
Journal code: 9430925. ISSN: 0032-0781.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200602
ENTRY DATE: Entered STN: 30 Dec 2005
Last Updated on STN: 1 Mar 2006
Entered Medline: 28 Feb 2006

AB **Laminarin**, a beta-1,3 glucan with single beta-glucose branches at position 6, was chemically sulfated to produce PS3 with a degree of sulfation of 2.4. PS3 has previously been shown to activate the salicylic

acid (SA) signaling pathway in infiltrated tobacco and Arabidopsis thaliana leaf tissues. Here, we investigated whether PS3 induces systemic defense and resistance responses in tobacco. Using a radiolabeled compound, it was first demonstrated that PS3 remains strictly localized to the infiltrated tissues. PS3 is also resistant to beta-glucanase degradation. In transgenic PR1-beta-glucuronidase (GUS) tobacco plants, PS3 causes a strong increase in GUS activity in treated tissues but none in untreated leaves. PS3-infiltrated tissues challenged with tobacco mosaic virus (TMV) 8 d after elicitor application show a decrease in both the lesion number and the lesion size, whereas treatment with **laminarin**, the unsulfated native glucan, affected only the lesion number. PS3 does not induce systemic acquired resistance to TMV. PS3 and **laminarin** show **synergistic** effects in promoting the oxidative burst in tobacco cell suspensions and in increasing the expression of genes encoding O-methyltransferases of the phenylpropanoid pathway in tobacco plants. No **synergistic** effect was observed on the expression of either the SA-dependent acidic PR1 gene or the ethylene-dependent basic PR5 gene in tobacco plants.

L24 ANSWER 13 OF 17 MEDLINE on STN
ACCESSION NUMBER: 2004258001 MEDLINE
DOCUMENT NUMBER: PubMed ID: 15004011
TITLE: The family 6 carbohydrate binding module CmCBM6-2 contains two ligand-binding sites with distinct specificities.
AUTHOR: Henshaw Joanna L; Bolam David N; Pires Virginia M R; Czjzek Mirjam; Henrissat Bernard; Ferreira Luis M A; Fontes Carlos M G A; Gilbert Harry J
CORPORATE SOURCE: School of Cell and Molecular Biosciences, University of Newcastle upon Tyne, Newcastle upon Tyne NE1 7RU, United Kingdom.
SOURCE: The Journal of biological chemistry, (2004 May 14) Vol. 279, No. 20, pp. 21552-9. Electronic Publication: 2004-03-05.
Journal code: 2985121R. ISSN: 0021-9258.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200407
ENTRY DATE: Entered STN: 26 May 2004
Last Updated on STN: 22 Jul 2004
Entered Medline: 21 Jul 2004

AB The microbial degradation of the plant cell wall is an important biological process, representing a major component of the carbon cycle. Enzymes that mediate the hydrolysis of this composite structure are modular proteins that contain non-catalytic carbohydrate binding modules (CBMs) that enhance catalytic activity. CBMs are grouped into sequence-based families, and in a previous study we showed that a family 6 CBM (CBM6) that interacts with xylan contains two potential ligand binding clefts, designated cleft A and cleft B. Mutagenesis and NMR studies showed that only cleft A in this protein binds to xylan. Family 6 CBMs bind to a range of polysaccharides, and it was proposed that the variation in ligand specificity observed in these proteins reflects the specific cleft that interacts with the target carbohydrate. Here the biochemical properties of the C-terminal cellulose binding CBM6 (CmCBM6-2) from Cellvibrio mixtus endoglucanase 5A were investigated. The CBM binds to the beta1,4-beta1,3-mixed linked glucans lichenan and barley beta-glucan, cello-oligosaccharides, insoluble forms of cellulose, the beta1,3-glucan **laminarin**, and xylooligosaccharides. Mutagenesis studies, informed by the crystal structure of the protein (presented in the accompanying paper, Pires, V. M. R., Henshaw, J. L., Prates, J. A. M., Bolam, D., Ferreira, L. M. A. Fontes, C. M. G. A., Henrissat, B., Planas, A., Gilbert, H. J., Czjzek, M. (2004) J. Biol. Chemical 279, 21560-21568), show that both cleft A and B can accommodate

cello-oligosaccharides and **laminarin** displays a preference for cleft A, whereas xylooligosaccharides exhibit absolute specificity for this site; and the beta1,4,-beta1,3-mixed linked glucans interact only with cleft B. The binding of CmCBM6-2 to insoluble cellulose involves **synergistic** interactions between cleft A and cleft B. These data show that CmCBM6-2 contains two binding sites that display differences in ligand specificity, supporting the view that distinct binding clefts with different specificities can contribute to the variation in ligand recognition displayed by family 6 CBMs. This is in sharp contrast to other CBM families, where variation in ligand binding is a result of changes in the topology of a single carbohydrate-binding site.

L24 ANSWER 14 OF 17 MEDLINE on STN
ACCESSION NUMBER: 2000025486 MEDLINE
DOCUMENT NUMBER: PubMed ID: 10556794
TITLE: **Synergistic** interactions among beta-**laminarinase**, beta-1,4-glucanase, and beta-glucosidase from the hyperthermophilic archaeon Pyrococcus furiosus during hydrolysis of beta-1,4-, beta-1,3-, and mixed-linked polysaccharides.
AUTHOR: Driskill L E; Bauer M W; Kelly R M
CORPORATE SOURCE: Department of Chemical Engineering, North Carolina State University, Box 7905, Raleigh, North Carolina 27695, USA.
SOURCE: Biotechnology and bioengineering, (1999) Vol. 66, No. 1, pp. 51-60.
Journal code: 7502021. ISSN: 0006-3592.
PUB. COUNTRY: United States
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 200001
ENTRY DATE: Entered STN: 4 Feb 2000
Last Updated on STN: 4 Feb 2000
Entered Medline: 27 Jan 2000

AB The **synergistic** interaction among three beta-specific glycosidases from the hyperthermophilic archaeon Pyrococcus furiosus, namely two endoglucanases (EglA and LamA) and an exo-acting beta-glucosidase (Bgl), on barley-glucan and **laminarin**, was examined. In addition to following glucose release and the generation of reducing sugar ends, the distribution and amounts of oligomeric products from beta-1,3- and beta-1,4-linked substrates were determined as a function of extent of hydrolysis at 98 degrees C. Positive interactions were noted between endo/exo glucanase combinations, leading to enhanced and rapid degradation of the larger complex carbohydrates to oligosaccharides. The EglA/LamA endo-acting combination was also **synergistic** in degrading barley-glucan. However, hydrolysis was most efficient when a blend of all three hydrolases was used, possibly due to the relief of product inhibition by the exoglyosidase. Furthermore, by monitoring the distribution of oligosaccharides present during hydrolysis, patterns of enzymatic attack could be followed in addition to determining the specific contributions of each hydrolase to the overall process.

L24 ANSWER 15 OF 17 MEDLINE on STN
ACCESSION NUMBER: 97164031 MEDLINE
DOCUMENT NUMBER: PubMed ID: 9010778
TITLE: Tachycitin, a small granular component in horseshoe crab hemocytes, is an antimicrobial protein with chitin-binding activity.
AUTHOR: Kawabata S; Nagayama R; Hirata M; Shigenaga T; Agarwala K L; Saito T; Cho J; Nakajima H; Takagi T; Iwanaga S
CORPORATE SOURCE: Department of Biology, Faculty of Science, Kyushu University, Fukuoka.
SOURCE: Journal of biochemistry, (1996 Dec) Vol. 120, No. 6, pp.

1253-60.
Journal code: 0376600. ISSN: 0021-924X.
PUB. COUNTRY: Japan
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
OTHER SOURCE: GENBANK-D85756
ENTRY MONTH: 199704
ENTRY DATE: Entered STN: 22 Apr 1997
Last Updated on STN: 3 Mar 2000
Entered Medline: 7 Apr 1997

AB Small granules of horseshoe crab hemocytes contain two known major antimicrobial substances, tachyplesin and big defensin (S5), and at least five protein components (S1 to S6), with unknown functions. In the present study, we examined the biological properties and primary structure of a small granular component S2, named tachycitin. This component was purified from the acid extract of hemocyte debris by two steps of chromatography. The purified tachycitin was a single chain protein with an apparent M(r) = 8,500 on Tricine-SDS-polyacrylamide gel electrophoresis. Ultracentrifugation analysis revealed tachycitin to be present in monomer form in solution. Tachycitin inhibited the growth of both Gram-negative and -positive bacteria, and fungi, with a bacterial agglutinating property. Moreover, tachycitin and big defensin acted **synergistically** in antimicrobial activities. The amino acid sequence and intrachain disulfide bonds of tachycitin were determined by amino acid and sequence analyses of peptides produced by enzymatic cleavages. The mature tachycitin consisted of 73 amino acid residues containing five disulfide bonds with no N-linked sugar. A cDNA coding for tachycitin was isolated from a hemocyte cDNA library. The open reading frame coded for an NH2-terminal signal sequence followed by the mature peptide and an extension sequence of -Gly-Arg-Lys at the COOH-terminus, which is a putative amidating signal. The COOH-terminal threonine amide released after digestion of tachycitin with lysylendopeptidase was identified. The NH2-terminal 28 residues of tachycitin shows sequence homology to a part of chitin-binding regions found in antifungal chitin-binding peptides, chitin-binding lectins, and chitinases, all of which have been isolated from plants. Tachycitin showed a specific binding to chitin but did not bind with the polysaccharides cellulose, mannan, xylan, and **laminarin**. Tachycitin may represent a new class of chitin-binding protein family in animals.

L24 ANSWER 16 OF 17 MEDLINE on STN
ACCESSION NUMBER: 93176335 MEDLINE
DOCUMENT NUMBER: PubMed ID: 8439405
TITLE: Hydrolytic properties of two cellulases of Trichoderma reesei expressed in yeast.
AUTHOR: Bailey M J; Siika-aho M; Valkeajarvi A; Penttila M E
CORPORATE SOURCE: VTT, Biotechnical Laboratory, Espoo, Finland.
SOURCE: Biotechnology and applied biochemistry, (1993 Feb) Vol. 17 (Pt 1), pp. 65-76.
Journal code: 8609465. ISSN: 0885-4513.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 199303
ENTRY DATE: Entered STN: 16 Apr 1993
Last Updated on STN: 3 Mar 2000
Entered Medline: 30 Mar 1993

AB Two cellulases of the filamentous fungus Trichoderma reesei, cellobiohydrolase II (CBHII, EC 3.2.1.91) and endoglucanase I (EGI, EC 3.2.1.4), produced in recombinant strains of the yeast Saccharomyces cerevisiae, were tested in the hydrolysis of cellulose, xylan and other polymeric substrates. Both enzymes were active against unsubstituted,

insoluble cellulose. CBHII had greater activity than EGI against crystalline cellulose, whereas in the case of amorphous substrate the order was reversed. Evidence for **synergism** was obtained when mixtures of the two enzymes were used with a constant total protein dosage. The EGI was also active against soluble substituted cellulose derivatives, whereas the activity of CBHII against these substrates was insignificant. Both enzymes were active against barley (1-->3,1-->4)-beta-glucan, but were inactive against (1-->3,1-->6)-beta-glucan (**laminarin**). An apparent low mannan-degrading activity of EGI against locust-bean (Ceratonia siliqua) gum galactomannan was not confirmed when homopolymeric mannan was used as substrate in a prolonged hydrolysis test. EGI exhibited considerably greater activity against insoluble, unsubstituted hardwood xylan than against amorphous cellulose. Soluble 4-O-methyl-glucuronoxylan was also attacked by EGI, although to a somewhat lesser extent than the unsubstituted xylan. By comparison with two purified xylanases of T. reesei, EGI produced xylo-oligosaccharides with a longer mean chain length when acting on both substituted and unsubstituted xylan substrates. CBHII was inactive against xylan.

L24 ANSWER 17 OF 17 MEDLINE on STN
ACCESSION NUMBER: 82067967 MEDLINE
DOCUMENT NUMBER: PubMed ID: 6796043
TITLE: Substrate specificity and mode of action of the cellulases from the thermophilic fungus Thermoascus aurantiacus.
AUTHOR: Shepherd M G; Tong C C; Cole A L
SOURCE: The Biochemical journal, (1981 Jan 1) Vol. 193, No. 1, pp. 67-74.
Journal code: 2984726R. ISSN: 0264-6021.
PUB. COUNTRY: ENGLAND: United Kingdom
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)
LANGUAGE: English
FILE SEGMENT: Priority Journals
ENTRY MONTH: 198201
ENTRY DATE: Entered STN: 16 Mar 1990
Last Updated on STN: 29 Jan 1999
Entered Medline: 20 Jan 1982

AB The substrate specificities of three cellulases and a beta-glucosidase purified from Thermoascus aurantiacus were examined. All three cellulases partially degraded native cellulose. Cellulase I, but not cellulase II and cellulase III, readily hydrolyzed the mixed beta-1,3; beta-1,6-polysaccharides such as carboxymethyl-pachyman, yeast glucan and **laminarin**. Both cellulase I and the beta-glucosidase degraded xylan, and it is proposed that the xylanase activity is an inherent feature of these two enzymes. Lichenin (beta-1,4; beta-1,3) was degraded by all three cellulases. Cellulase II cannot degrade carboxymethyl-cellulose, and with filter paper as substrate the end product was cellobiose, which indicates that cellulase II is an exo-beta-1,4-glucan cellobiosylhydrolase. Degradation of cellulose (filter paper) can be catalysed independently by each of the three cellulases; there was no **synergistic** effect between any of the cellulases, and cellobiose was the principal product of degradation. The mode of action of one cellulase (cellulase III) was examined by using reduced cellulodextrins. The central linkages of the cellulodextrins were the preferred points of cleavage, which, with the rapid decrease in viscosity of carboxymethyl-cellulose, confirmed that cellulase III was an endocellulase. The rate of hydrolysis increased with chain length of the reduced cellulodextrins, and these kinetic data indicated that the specificity region of cellulase III was five or six glucose units in length.

```
=> d his

     (FILE 'HOME' ENTERED AT 11:52:36 ON 28 JUN 2006)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 11:52:43 ON 28 JUN 2006
L1             2 S CYCLOPHOSPHAMIDE (P) LAMINARIN
L2          8649 S CYCLOPHOSPHAMIDE (P) CANCER?
L3             5 S LAMINARIN (P) CANCER?
L4            19 S LAMINARIN (P) TUMOR?
L5             0 S LAMINARIN (P) TUMOR? (P) CYCLOPHOSPHAMIDE?
L6             2 S LAMINARIN (P) CYCLOPHOSPHAMIDE?
L7             1 S LAMINARIN (P) ANTINEOPLAS?
L8             0 S LAMINARIN (P) ANTICANCER?
L9             0 S LAMINARIN (P) ANTI-CANCER?
L10            8 S LAMINARIN (P) NEOPLASM?
L11            3 S LAMINARIN (P) CHEMOT?
L12            1 S L2 AND LAMINARIN?
L13            0 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVMENT
L14          432 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVEMENT
L15            0 S L14 AND ?GLUCAN?
L16            0 S L14 AND GLUCAN?
L17            0 S L14 AND LAMINARIN?
L18            0 S ANTINEOPLASTIC AGENT? (P) CANCER? (P) LAMINARIN?
L19            0 S ANTINEOPLASTIC AGENT? (P) TUMOR? (P) LAMINARIN?
L20            0 S ANTICANCER AGENT? (P) TUMOR? (P) LAMINARIN?
L21            0 S ANTICANCER AGENT? (P) LAMINARIN?
L22            0 S ANTINEOPLASTIC AGENT? (P) LAMINARIN?
L23            0 S ANTICANCER AGENT? (P) LAMINARIN?
L24           17 S SYNERGI? (P) LAMINARIN?
```

```
=> d his

     (FILE 'HOME' ENTERED AT 11:52:36 ON 28 JUN 2006)

     FILE 'CAPLUS, MEDLINE' ENTERED AT 11:52:43 ON 28 JUN 2006
L1             2 S CYCLOPHOSPHAMIDE (P) LAMINARIN
L2          8649 S CYCLOPHOSPHAMIDE (P) CANCER?
L3             5 S LAMINARIN (P) CANCER?
L4            19 S LAMINARIN (P) TUMOR?
L5             0 S LAMINARIN (P) TUMOR? (P) CYCLOPHOSPHAMIDE?
L6             2 S LAMINARIN (P) CYCLOPHOSPHAMIDE?
L7             1 S LAMINARIN (P) ANTINEOPLAS?
L8             0 S LAMINARIN (P) ANTICANCER?
L9             0 S LAMINARIN (P) ANTI-CANCER?
L10            8 S LAMINARIN (P) NEOPLASM?
L11            3 S LAMINARIN (P) CHEMOT?
L12            1 S L2 AND LAMINARIN?
L13            0 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVMENT
L14          432 S CYCLOPHOSPHAMIDE (P) CANCER? (P)IMPROVEMENT
L15            0 S L14 AND ?GLUCAN?
L16            0 S L14 AND GLUCAN?
L17            0 S L14 AND LAMINARIN?
L18            0 S ANTINEOPLASTIC AGENT? (P) CANCER? (P) LAMINARIN?
L19            0 S ANTINEOPLASTIC AGENT? (P) TUMOR? (P) LAMINARIN?
L20            0 S ANTICANCER AGENT? (P) TUMOR? (P) LAMINARIN?
L21            0 S ANTICANCER AGENT? (P) LAMINARIN?
L22            0 S ANTINEOPLASTIC AGENT? (P) LAMINARIN?
L23            0 S ANTICANCER AGENT? (P) LAMINARIN?
L24           17 S SYNERGI? (P) LAMINARIN?
```